JANUARY 5, 1950

ENGINEERING NEWS-RECORD

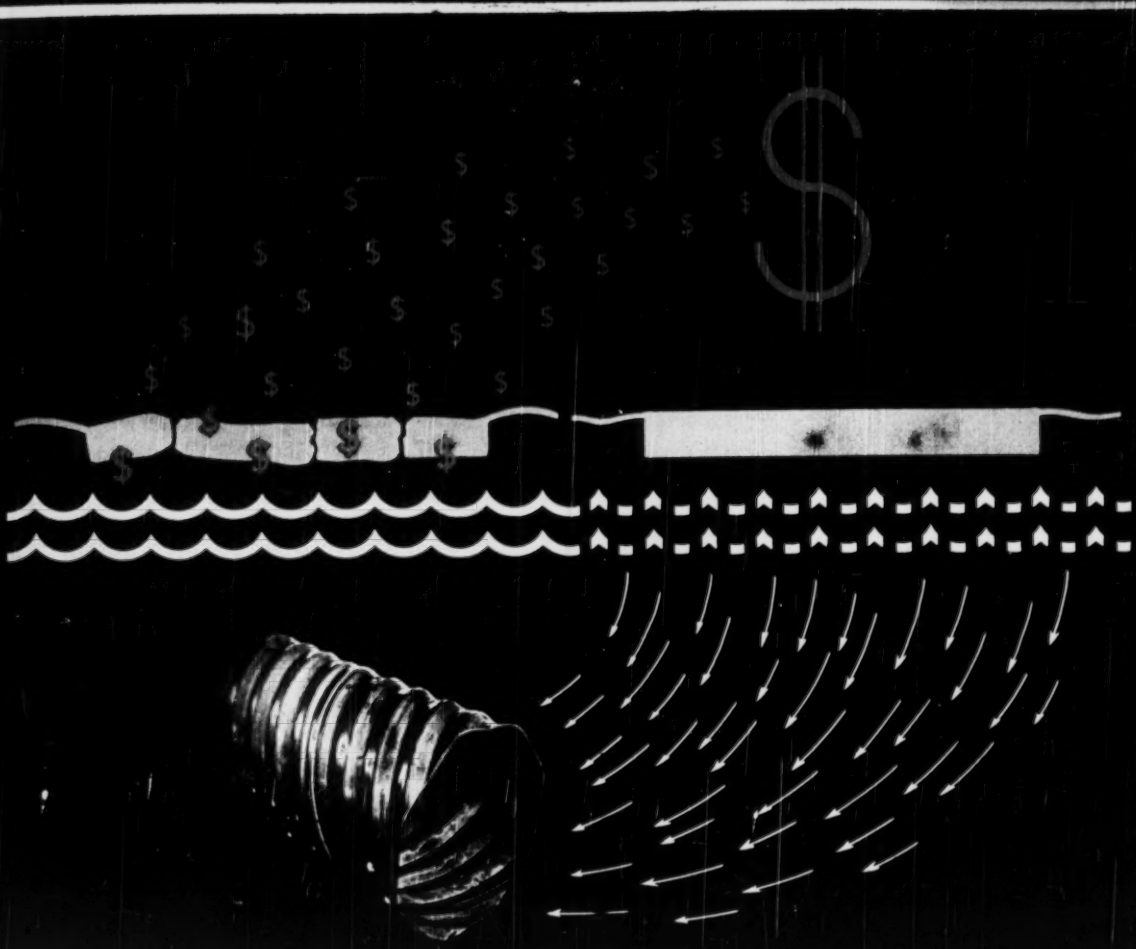
SEVENTY-SIXTH YEAR OF PUBLICATION

Boss in Mississippi—Brig. Gen. Don C. Shingler takes over upper river division (see p. 10)

★ LONG ISLAND PARKWAYS GROW LONGER

★ HOW TO MEET AGGREGATE STANDARDS

A McGRAW-HILL PUBLICATION



A lot of overhead was underfoot

Highway engineers and officials used to worry about the cost of repairing expensive pavements that broke up year after year. Cures were often only temporary even when it was known that the troublemaker was harmful groundwater lurking in the subgrade. Then ARMCO Engineers said: "The only sure cure is to drain the water out and *keep it out.*"

To do this they developed ARMCO HEL-COR Pipe and perforated it. Scientifically placed holes collect unwanted water, which is drained off along the pipe invert. Subgrades become dry and stable. Made on automatic machines, HEL-COR Pipe meets all the needs of a first-class subdrainage system. It is low in cost, easy to handle and durable. It also has ample strength to withstand shifting soils, frost action or the impact and vibration of heavy loads without crushing, cracking or disjointing.

Providing better products to meet specific needs has been standard practice at ARMCO for more than 40 years. A few examples are FLEX-BEAM Guardrail, Spiral Welded Pipe, STEELOX Buildings, PIPE-ARCH and sturdy, dependable MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to ARMCO with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

ARMCO has a complete range of engineered products and convenient authoritative data to help you. If your problem is difficult or unusual why not talk it over with us.

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • DIVISION OFFICES AND PLANTS IN THE FOLLOWING CITIES

Berkeley, California ★ Middletown, Ohio ★ South Bend, Indiana ★ Baltimore, Maryland
Denver, Colo. ★ Des Moines, Iowa ★ Atlanta, Ga. ★ Topeka, Kansas ★ Houston, Texas
Minneapolis, Minnesota ★ Portland, Oregon ★ Washington [illegible]

B.F.Goodrich

Why you get more recappable tires when you use B.F.Goodrich

IN TOUGH, off-the-road operations like that shown above, mileage doesn't mean much in measuring tire service. Instead, the yardstick is number of hours a tire works and whether or not worn treads can be recapped, or if sharp, jagged rocks cause serious tread cuts.

Reports from B.F.Goodrich users indicate top performance of BFG tires as compared with other brands. For example, one operator reported over 4,500 service hours from B.F.Goodrich *Universals* vs. only 1,600 hours from another make in identical service.

B.F.Goodrich tires stand out in service for many reasons. Tread rubber is specially compounded to resist cutting. More tires can be recapped because they have double bruise protection in the B.F.Goodrich *double nylon shock shield* . . . layers of nylon cord built in between the tread and the body plies.

Only BFG gives you the added protection of the nylon shock shield; the added savings of (1) longer tire life (2) increased bruise resistance (3) less danger of tread separation (4) more recappable tires. But nylon shock shield costs no extra — you pay no premium!

Another "special" is the new ALL-NYLON tire for tough construction projects, quarry work, strip mining, etc. In all tests, not a single BFG All-Nylon tire blew out, not one flex break occurred!

There's a specially designed off-the-road type B.F.Goodrich tire for every need. See your dealer or write, wire or phone — *The B.F.Goodrich Company, Akron, Ohio.*

50¢ 1950 EDITION

COPYRIGHT 1950

English and Spanish Texts

DIRECTIONS FOR MAKING ASTRONOMICAL OBSERVATIONS AND COMPUTING RESULTS. Azimuth by Direct Solar Observation and time from same observation. Meridian by Solar Attachment. Meridian by Polaris at Elongation. Azimuth by Polaris at any Hour Angle. Latitude by Sun at Noon. Latitude by Polaris. All requisite tables (except 5 place trigonometric).

No. 6¼ — R — BUZKA Transit

Results are most accurate with a BERGER

Work fast and accurately with a Berger instrument — get more work done in a day. Errors are eliminated, costly manpower saved. *Go for years if not for a lifetime without "laid up" instruments and repair bills.* Get unparalleled economy, not only in the long run, but in everyday use.

Leadership **BERGER** *Since 1871*

THIS COUPON BRINGS DATA

C. L. BERGER & SONS, INC. 1550
37 WILLIAMS ST.
ROXBURY, BOSTON 19, MASS.

Send me the 1950 Edition SOLAR EPHEMERIS

Name .....
Title .....
Company .....
Address .....
City ..... Zone ..... State .....

ENGINEERING NEWS-RECORD

VOLUME 144 JANUARY 5, 1950 NO. 1

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Long Island Parkways Keep Growing 36
Treatment, Equipment, and Stream Pollution 38
New Apartments for Oak Ridge Workers 42
Jack Pipeline under River Bed 44
How to Blend Aggregates to Meet Specifications .....G. F. Driscoll 45

DEPARTMENTS

Construction Week 23
Scoreboard 25
Editorials 27
News of the Week 29
Notes on Legal Decisions 48
Municipal Affairs 50
Developments Abroad 56
Elections and Activities 60
Men and Jobs 66
Obituaries 76
Education and Research 78
Material Prices 81
Construction Reports 86
New Products 118
Perspective 128

Number of copies of this issue printed 44,585

Managing Editor—Eugene E. Halmos, Jr.
Associates Editors—*New York*, V. T. Boughton, (senior associate), F. S. Merritt, R. H. Dodds, J. C. Bumstead, R. N. Larkin; *Cleveland*, J. R. Carr; *Chicago*, H. T. Perez; *San Francisco*, N. A. Bowers; *Washington*, V. B. Smith.

Assistant Editors—*New York*, T. D. MacGregor, Arthur J. Fox, Jr., Melvin Dean; *San Francisco*, L. L. Wise.

Contributing Editor—Edward J. Cleary.

Business News—Elsie Eaves, *Manager*; J. A. Mahoney, Robert F. Westervelt, M. W. Roessler, M. Wetzel, E. M. Huber, Jane Lucia.

Staff Assistants—Ethel Lyon, Louise Barker, Madalene Smith, Henry Lefer, Behri Pratt, Ruth Imler.

Domestic News Bureau—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

Member ABC Member ABP

January 5, 1950 ENGINEERING NEWS RECORD Vol. 144—No. 1

Publication Office—99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1949 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Vice-President and Director of Advertising; EUGENE DUFFIELD, Senior Vice-President, Publications Division; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable Address: McGraw Hill New York.

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 25¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

If you have a real Rock Shovel you'll never have to worry about output in any kind of digging. Start with a real Rock Shovel and you'll be sure to finish the job.

Northwests are proved Rock Shovels with advantages a Rock Shovel should have.

The Northwest Dual Independent Crowd utilizes force other independent crowd shovels waste. Cast Steel Machinery Bases and Cast Steel Machinery Side Frames are better able to take the strains of tough digging. The Cushion Clutch relieves all parts under power from shock loads and increases machine life and cable life. The "Feather-Touch" Clutch Control increases output, assuring easier operation and a *feel of the load* that makes it easier to handle the big ones. These are just a few of the many advantages you won't find in other shovels—just a few of the features that make money in the heart of the Rock Job. Put a Northwest in the *Key Spot* and be sure of the kind of service that makes one out of every three Northwests sold a repeat order.

NORTHWEST ENGINEERING CO., 1502 Field Bldg., 135 South LaSalle St., Chicago 3, Ill.

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

PUSH .. where it pays!

Oliver "Cletrac" Model FDE Heil Trailbuilder on large land clearing project.

An Oliver "Cletrac" crawler tractor and its Heil dozer puts a big "push" behind any dirt moving job. The extra pushing power you get with an Oliver "Cletrac" permits you to handle bigger loads . . . get the job done faster! Here's why!

With the Oliver "Cletrac" exclusive steering principle, there is always power on both tracks . . . you never have to sacrifice "push" to make a turn. When you pull back on the steering lever, the track on that side slows down, the other speeds up to give you a power turn with plenty of load-handling ability. And, the off-center loads of dozing operations can be handled with no loss of time since the pull of the off-center load can be balanced by speeding up the track on the more heavily loaded side. You don't have to "zigzag" . . . can travel a straight line for most effective dirt moving.

For all the facts on Oliver "Cletrac" tractors and their time-saving, cost-cutting steering, see your Oliver "Cletrac" Distributor.

Cletrac

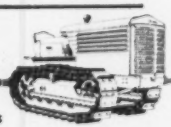
a product of

The OLIVER Corporation

Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio

OLIVER Cletrac SALES SERVICE

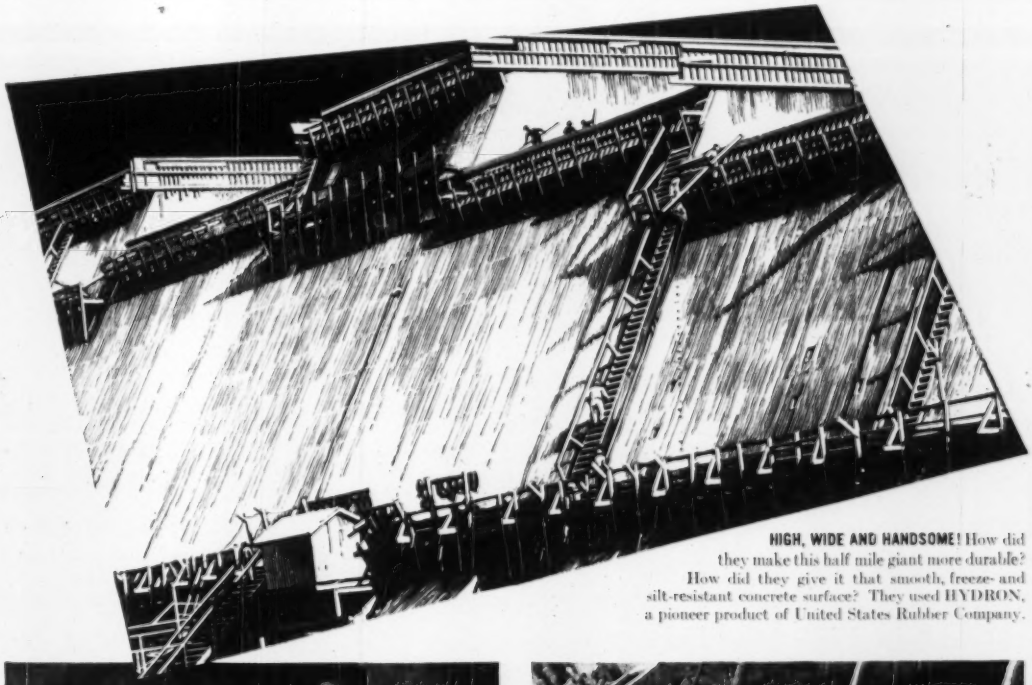
"THE SIGN OF EXTRA SERVICE"



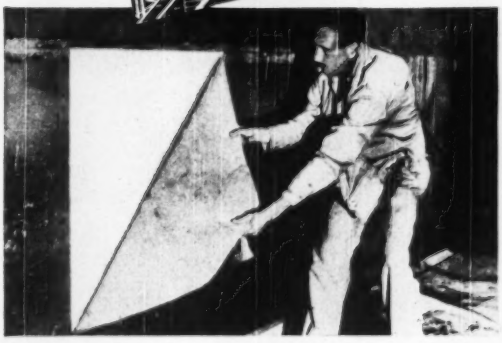
A Complete Line of Crawler and Industrial Wheel Tractors

SECRET OF A GIANT'S STRENGTH

Giant Norfolk Dam built with Hydron Form Linings for stronger, pit-free concrete surfaces



HIGH, WIDE AND HANDSOME! How did they make this half mile giant more durable? How did they give it that smooth, freeze- and silt-resistant concrete surface? They used HYDRON, a pioneer product of United States Rubber Company.



LEARN THE SECRET of Hydron! It's a flexible absorptive form lining only 0.08 of an inch thick. It absorbs excess water and eliminates trapped air. Concrete laid against Hydron is smoother—lasts longer.

HOW IT'S DONE! Hydron is mounted to wooden forms by *rapid fire staple guns;* to metal frames, with special adhesive. Comes in a flat box, 4 x 6 ft. Easy to handle, easy to cut or trim for any giant job!

Engineers and contractors who have used Hydron Form Linings report that Hydron adds *years* to the serviceable life of concrete. Yet, the *total* cost, including a satisfactory profit, is only 12¢ to 16¢ per square foot. For more information write Mechanical Goods Division,

A DEVELOPMENT OF

U.S. RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

ROCKEFELLER CENTER, NEW YORK 20, N. Y.

STRIKE THIS "TELLING BLOW": Hit *Marfak* hard! The fact that it doesn't splatter like ordinary grease tells you that heavy loads and rough roads won't hammer it out of spring shackles, tie rods and other chassis parts . . . proves that *Marfak* gives safer, longer-lasting protection with fewer applications.

LIGHTEN YOUR MAINTENANCE COST LOAD

Save 3 ways on chassis upkeep by using

TEXACO MARFAK
"More than 300 million pounds sold!"

PROTECT chassis bearings with *Texaco Marfak* and (1) *save parts replacements* – *Marfak* won't squeeze or jar out of bearings . . . gives full protection against wear and rust . . . lengthens life of parts; (2) *save lay-up time* – *Marfak* protection assures fewer repairs and overhauls . . . keeps vehicles on the job; (3) *save lubrication expense* – *Marfak* gives protection for extra hundreds of miles . . . fewer applications are needed.

For similar savings in wheel bearing maintenance, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture . . . seals in its protective lubricating film. Safer braking is assured. No seasonal change is required.

Lubricate engines – heavy-duty gasoline and Diesel – *with Texaco Ursa Oil X***. It cleans as it lubricates, keeps fuel consumption and upkeep costs low. Lubricate crawler track mechanisms with *Texaco Track Roll Lubricant* – it seals out dirt and moisture, assures longer life for parts.

Let a Texaco Lubrication Engineer help you simplify and improve your maintenance lubrication procedures. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd St., New York 17, N. Y.

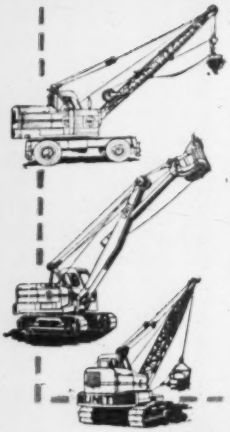
TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

TEXACO

TEXACO

Lubricants and Fuels

FOR ALL CONTRACTOR'S EQUIPMENT



Everywhere . . . on all types of jobs . . . you see UNITS operating at peak efficiency. They LIFT . . . LOAD . . . HAUL . . . DIG . . . with speed and precision, and with power to spare.

UNITS are chosen for the tough jobs because they are carefully engineered and ruggedly constructed, backed by a quarter century of experience building shovels and cranes exclusively. The new FULL VISION CAB provides maximum visibility. Operator sees in all directions. Promotes safety.

UNITS are available in ½ and ¾ yard excavators and cranes up to 15 tons capacity. Crawler or mobile type...Fully convertible to ALL attachments . . . Diesel or gas engine. Write for literature.

UNIT CRANE & SHOVEL CORP.
6315 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

LET US TELL YOU THE REASONS WHY

FULL VISION CAB for GREATER SAFETY

UNIT

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

GUNITE
PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH
for
Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

NEWS BRIEFS

Missouri Votes No—Gov. Forrest Smith has withheld Missouri's consent to three dams proposed for the Meramec River basin by the Army Engineers. Considerable protest had been made in public hearings, based largely on the contention that the dams would affect adversely scenic and recreational values.

Back to School—Supervisory employes of New York State's Department of Public Works will start a series of training conferences early this year. The program evolved from the rapid expansion of department personnel in postwar years. Conferences will be held at 10 district offices and in Albany.

Action, Please—Virginia's Water Control Board had directed the city of Lynchburg to start work immediately on a preliminary survey for treatment of sewage now discharged raw in the James River and its tributaries. The board dismissed the city's argument that sewage treatment plans should await completion of a cities-industries survey of area pollution.

No Treaty Necessary—Minnesota's Highway Department, not the U. S. State Department, will handle negotiations for transfer of some Canadian real estate to the United States. It's advertised for bids on 100,000 cu. yd. of mineral aggregate to come from a gravel pit in Ontario.

Commission for Director?—Washington's legislative will get the chance, in 1951, to substitute a highway commission for its highway director. The state Good Roads Association will recommend approval of two bills, one to make the substitution, the other to amend the constitution permitting it.

Michigan Stream Cleanup—Michigan's Water Resources Commission has received a 19-step program for controlling stream pollution in the Detroit area. Developed by commission engineers, the program may be enforced by commission order. Its cost may run as high as $100,000,000.

One for the Lawyers—Hannibal, Mo., is trying to determine whether it may lease part of a 100-acre riverfront tract deeded to the city a century ago for use as a public landing place. Three firms want to lease part of it for a grain elevator.

(Continued on page 10)

SOFT SHOULDER or BLOWOUT doesn't mean Disaster

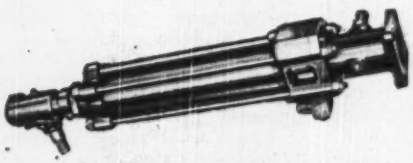
When You Have VICKERS Hydraulic POWER STEERING

There's less hazard when forced off the road onto soft, rocky, rutted or snow banked shoulders . . . when you have Vickers Hydraulic Power Steering. The steering mechanism is hydraulically locked against any road condition reaction. The vehicle can't swerve from road reaction. There's no "wheel fight" to wrench the steering wheel out of the driver's hands. Pull-back onto the road requires only a trigger-pull on the steering wheel.

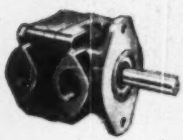
Vickers Hydraulic Power Steering is safer . . . effortless . . . provides hydraulic power at instant command of the driver to meet any steering requirements. This extra-quick steering increases the ability to maneuver in emergency. The driver is less tired, more alert.

Vickers Hydraulic Power Steering can be used as original equipment, or adapted to most trucks and other vehicles now in service. Write for Bulletins 47-30 and 49-52 covering further details and specifications.

VICKERS
HYDRAULIC POWER STEERING
is Effortless, Positive, Shockless



Vickers Hydraulic Steering Booster with Integral Overload Relief Valve. Bulletin 47-30a.

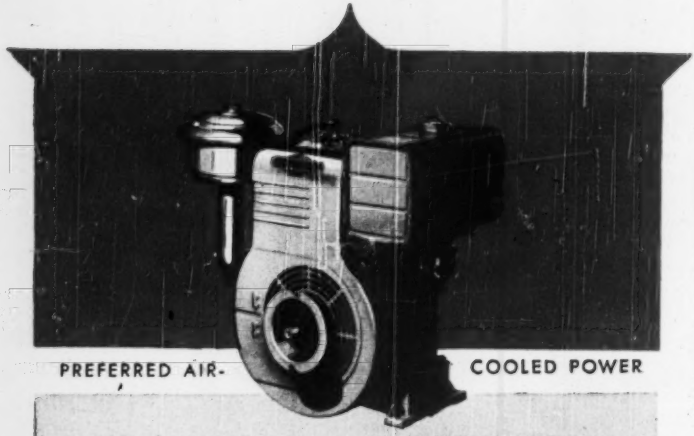


Vickers Balanced Vane Type Pump is Engine Driven. Bulletins 36-12 and 49-52.

VICKERS Incorporated
DIVISION OF SPERRY CORPORATION
1496 OAKMAN BLVD. • DETROIT 32, MICH.

Application Engineering Offices: ATLANTA • CHICAGO • CINCINNATI • CLEVELAND • DETROIT HOUSTON • LOS ANGELES (Metropolitan) • MILWAUKEE • NEW YORK (Metropolitan) PHILADELPHIA • PITTSBURGH • ROCHESTER • ROCKFORD • ST. LOUIS • SEATTLE • TULSA WASHINGTON • WORCESTER

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



It's Powered "RIGHT" when It's Powered by

BRIGGS & STRATTON

Designed "Right" — Built "Right"
The Preferred Power of
Users, Dealers and Manufacturers

The reputation for "dependable" performance established by more than 4 million engines, during a period of over 30 years, has placed Briggs & Stratton as first choice in the field — the "Preferred Air-Cooled Power" the world over.

Let the Briggs & Stratton trademark be your guide to all that is best in 4-cycle, single-cylinder air-cooled gasoline engine performance.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES
Preferred Power
FOR INDUSTRIAL CONSTRUCTION RAILROAD AND FARM EQUIPMENT

(Continued from page 8)

Post-Postwar Construction—Philadelphia has embarked on a $13,000,000 school construction program. It's a supplement to a postwar school expansion program which has added 11 new school buildings at a total cost of $20,000,000.

Homeowners Lose—Residents of Ladue, a wealthy residential section of St. Louis, got nowhere in their attempt to have truck and bus traffic diverted from a highway through the area. The Missouri Public Service Commission ruled that no part of the public which built the road should be excluded from it regardless of noise and traffic nuisances.

Largest River Cleanup—Army Engineers have completed plans for the removal of 11,000,000 tons of silt from the Schuylkill River between Norristown and Philadelphia. Col. Earl W. Gesler, district engineer, who described the entire Schuylkill job as the country's biggest river cleanup. (ENR Nov. 24, p. 27), said bids will be called in March for three impounding basins into which refuse from the river bed will be pumped.

THE COVER

Brig. Gen. Don C. Shingler, new boss of the Army's Upper Mississippi Valley Division, is making a move from the long-tamed rivers of Europe to the wild power of U. S. streams.

A career army engineer, Gen. Shingler has just completed a three-year tour as Chief, Engineer Division, Headquarters, U. S. Command in Germany. He follows retiring Col. Clark Kittrell into the Mississippi River post.

Native of Perry Center, New York, and a West Pointer, Gen. Shingler was graduated from the military academy in 1918, and served in various posts throughout the United States and Panama until 1941. Then he was sent to Iraq as chief of staff and commanding officer of a U. S. mission there. He served another year as commanding officer and later chief of staff of the Persian Gulf Service Command, then returned to the U. S. to command the Engineer Training Center at Camp Claibourne, La. In the spring of 1944, as chief of the Amphibious Section, First Army, he participated in landings at Omaha and Utah beaches in France, sustaining injuries there that took him out of action for some months.

During the remainder of the war, he headed the international division for the Army Service Forces, at Washington, then took over his European assignment in 1946.

Raymond

MAKES 5 TYPES OF CONCRETE PILES

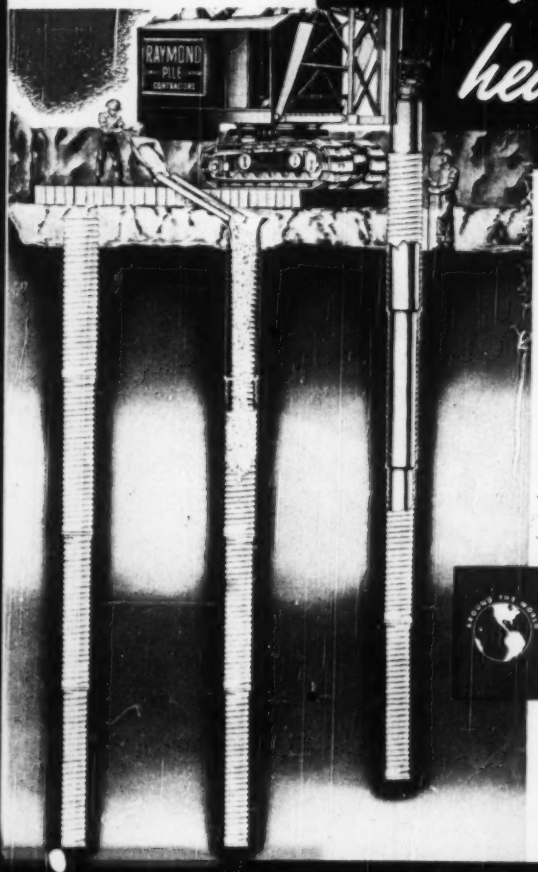
1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER

4. COMPOSITE. . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning; borings and soil investigations; waterfront construction and harbor and river improvements; also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

At left, completed Step-Taper Pile. Center, filling the permanent steel shell with concrete after internal inspection. Right, driving the pile with rigid core.

2. STEP-TAPER PILES FOR *long lengths* WITH *heavy loads*



Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

You are invited to discuss with our engineers the efficiencies and savings made possible by Raymond's exclusive, original concrete pile designs.

RAYMOND PILES MAINTAIN DRIVING RESISTANCE

Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

PROMPT DELIVERY ON CONSTRUCTION FASTENINGS ...ALL TYPES AND SIZES PLAIN OR GALVANIZED

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

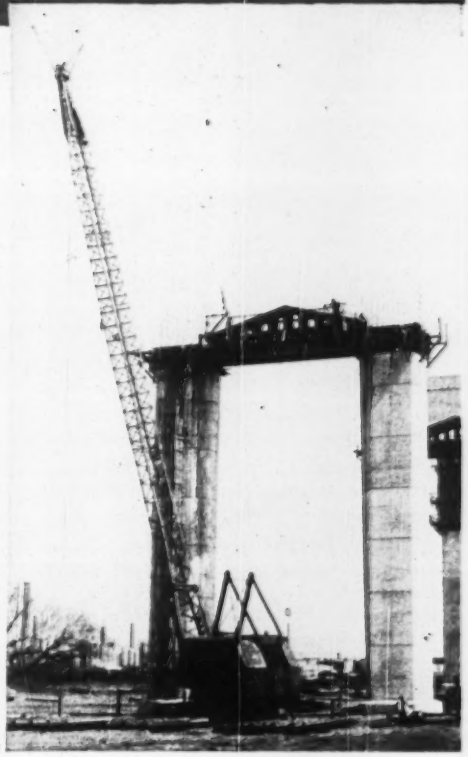
Cummins-Powered Cranes Pour 50.7 YARDS AN HOUR AT 96 FEET

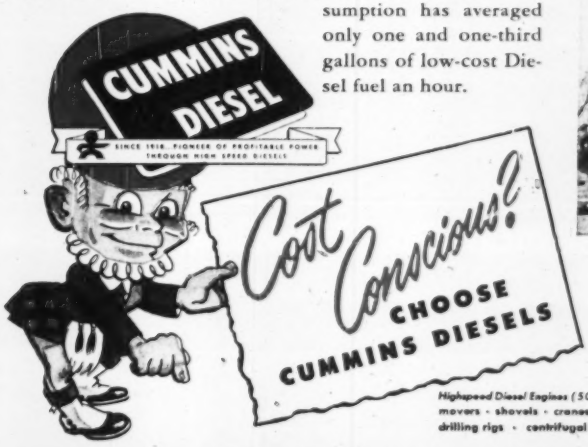
High-lift Pouring Records Set on Penrose Ferry Bridge Job

Records for high-lift concrete pouring are being established by two Cummins-Powered Model 3500 Manitowoc Speedcranes used by Foley Brothers of Pleasantville, N. Y., on the Penrose Ferry Bridge job in Philadelphia, Pa.

For example, one of the Cummins-Powered cranes poured 507 cubic yards of concrete in 10 hours with the lift at a 96-foot height. At this height a 125-foot boom and a two-yard bucket were used. Above this height—to a maximum of 130 feet—pours were made with a one-yard bucket and main boom plus a 20-foot jib.

Since early in 1948, the only maintenance required for the two supercharged 200 hp Cummins Diesels has been the replacement of filter cartridges and gaskets—and fuel consumption has averaged only one and one-third gallons of low-cost Diesel fuel an hour.




CUMMINS DIESEL
SINCE 1918 PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS
Cost Conscious?
CHOOSE CUMMINS DIESELS

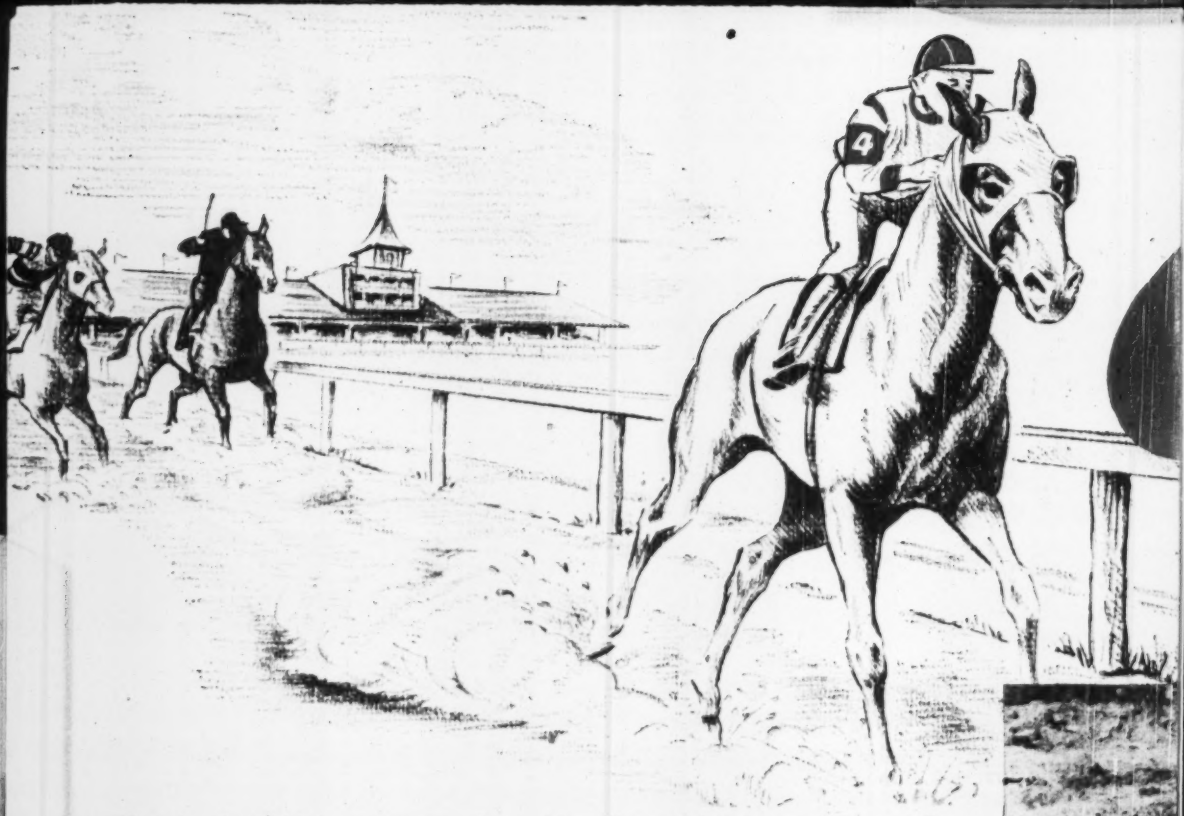
Service

One of the more than 200 Cummins Dealers is as close as your phone!

Highspeed Diesel Engines (50-550 hp) for: On-highway trucks • off-highway trucks • buses • tractors • earth-movers • shovels • cranes • industrial locomotives • air compressors • logging yarders and loaders • drilling rigs • centrifugal pumps • generator sets and power units • work boats and pleasure craft.

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA

EXPORT: CUMMINS DIESEL EXPORT CORPORATION • COLUMBUS, INDIANA, U. S. A. • CABLE: CUMDIEX



First in the field in every way, the International TD-24 is the only crawler that gives you these features:

- *Eight Speeds*, forward and reverse—an ideal speed for every phase of operation.
- *Synchromesh Transmission*, for easy on-the-go shifting, cuts waste shifting time almost completely out of your cycle.
- *Planet Power Drive* gives you power on both tracks in a turn for magic maneuverability *plus* an instant shift up or down one speed in both high and low range.
- *Finger-Tip Hydraulic Steering* control erases operator fatigue.
- *140 Drawbar Horsepower* gives you more working horsepower than any other crawler.

No other crawler tractor has any of these profit-building features that shrink your costs of operation. Like every operator who has applied the seat of his pants to the comfortable cushion of the TD-24, you too will say, "It's a dirt-moving demon—no other crawler can compare with it."

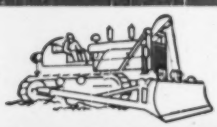
See your International Industrial Power Distributor now and get the champion crawler of them all—the International TD-24—to work for you.

INTERNATIONAL HARVESTER COMPANY • Chicago

Hot news from the "grapevine": J. W. Mosely, contractor on the big Grapevine Dam project near Dallas, Texas, says of his International TD-24's, "In my estimation, the International TD-24 crawler tractor is the new champion of crawlers."

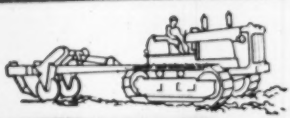
INTERNATIONAL
INDUSTRIAL POWER

INTERNATIONAL HARVESTER



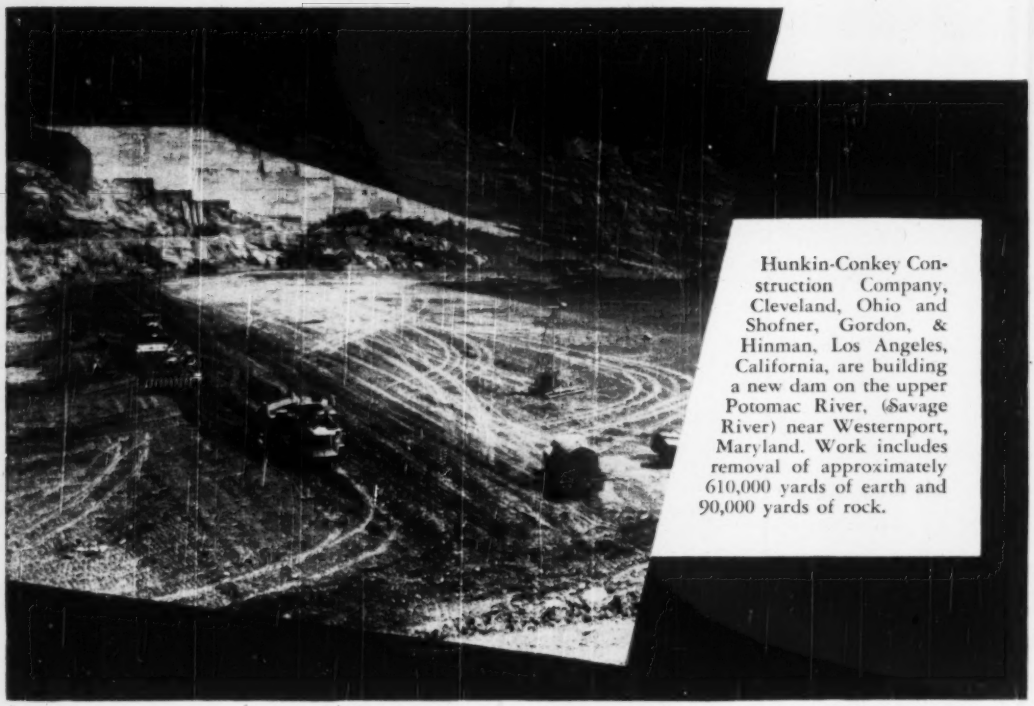
CHAMPION OF 'EM ALL

CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS



GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling at Savage River dam



Hunkin-Conkey Construction Company, Cleveland, Ohio and Shofner, Gordon, & Hinman, Los Angeles, California, are building a new dam on the upper Potomac River, (Savage River) near Westernport, Maryland. Work includes removal of approximately 610,000 yards of earth and 90,000 yards of rock.

ANOTHER big earth-moving project where Gulf quality products and cooperative services are working as a team to help the job roll smoothly and efficiently.

Here are a few of the reasons why so many leading contractors rely on Gulf to fuel and lubricate their equipment; Gulf lubricants provide an extra margin of protection. Gulf fuels insure full power. Gulf supplies expert engineering counsel and prompt delivery service. Result: top performance from equipment, fewer delays, lower maintenance costs, bigger profits!

Write, wire or phone your nearest Gulf office today and arrange to use Gulf quality petroleum products on your next job.

GULF

Gulf Oil Corporation · Gulf Refining Company

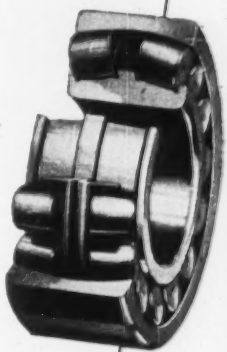
Offices in Principal Cities in 30 States

NEVER TOO MUCH... NEVER TOO LITTLE BUT ALWAYS JUST RIGHT

because of TOLERANCE CONTROL

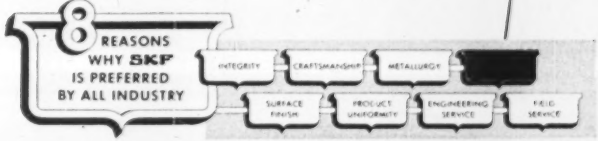
Another reason why industry prefers SKF

Remember leapfrog? How you used to have to skim over just right? Well, it's very much the same thing in specifying bearings. You don't want tolerances too great... and you don't want tolerances closer than the job demands. But you want to be sure that tolerances are *right*... are *always* properly controlled... *always* meet established standards. SKF adheres rigidly to these standards. Ceaseless vigilance in every stage of production assures complete control of tolerance throughout the entire manufacturing cycle. You can always be sure that any SKF Bearing will exactly meet your requirements... and will meet them again and again. Never forget, either, that *tolerance control* is only *one* reason why SKF Bearings will help you build equipment which, through smooth, economical performance, helps develop greater acceptance for your product. SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.



SKF

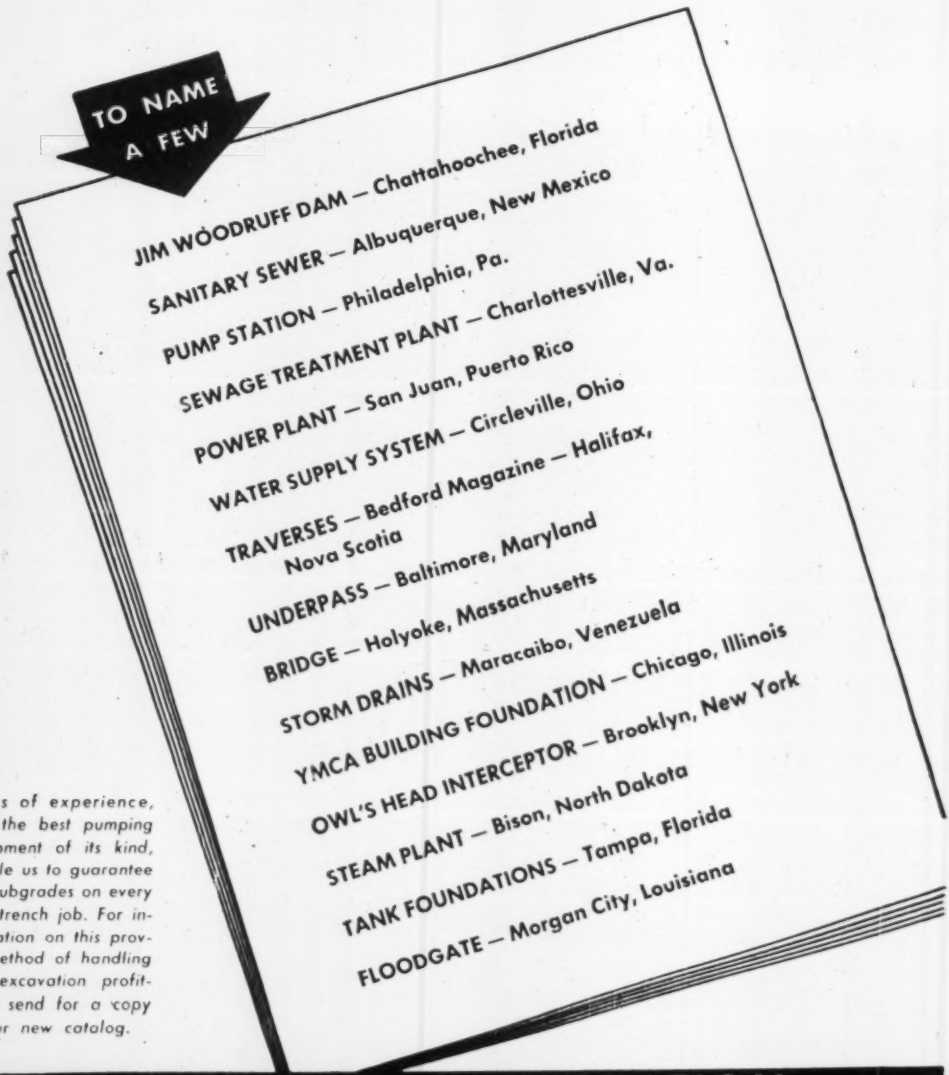
Ball and Roller Bearings



Inventors and Pioneers of the Self-Aligning Ball Bearing and Spherical Roller Bearing

The MORETRENCH WELLPOINT SYSTEM

is used to dewater wet excavation on a wide variety of projects – all over the world


TO NAME A FEW
JIM WOODRUFF DAM — Chattahoochee, Florida
SANITARY SEWER — Albuquerque, New Mexico
PUMP STATION — Philadelphia, Pa.
SEWAGE TREATMENT PLANT — Charlottesville, Va.
POWER PLANT — San Juan, Puerto Rico
WATER SUPPLY SYSTEM — Circleville, Ohio
TRAVERSES — Bedford Magazine — Halifax, Nova Scotia
UNDERPASS — Baltimore, Maryland
BRIDGE — Holyoke, Massachusetts
STORM DRAINS — Maracaibo, Venezuela
YMCA BUILDING FOUNDATION — Chicago, Illinois
OWL'S HEAD INTERCEPTOR — Brooklyn, New York
STEAM PLANT — Bison, North Dakota
TANK FOUNDATIONS — Tampa, Florida
FLOODGATE — Morgan City, Louisiana

Years of experience, and the best pumping equipment of its kind, enable us to guarantee dry subgrades on every Moretrench job. For information on this proven method of handling wet excavation profitably, send for a copy of our new catalog.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

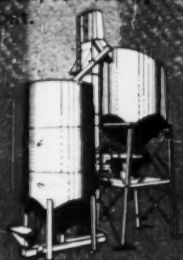
BIG PROFITS WILL COME BY BEIN' THRIFTY
IN ANNO DOMINI NINETEEN-FIFTY —

BUTLER Thrift-Equipment for 1950 PROFITS!

Central Mixing Plants
Engineered for speed production, lowest operating cost.

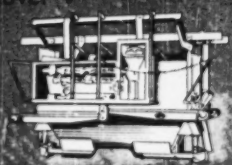
Ready Mixed Plants
From small units to the world's most automatic.

Aggregate Plants
For the busy roadbuilder who is always on the move.

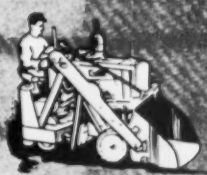


Bulk Cement Plants
Tops in portability coupled with high speed batching.

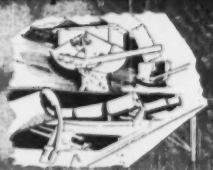
Concrete Block Plants
Butler engineers have a remarkable "know-how" in planning the most efficient production.



Weighing Batchers
Many smart features make Butler Batching equipment the wise and economical choice.



Butler Carscoop
Agile, dextrous and quick, it's the world's fastest boxcar unloader.



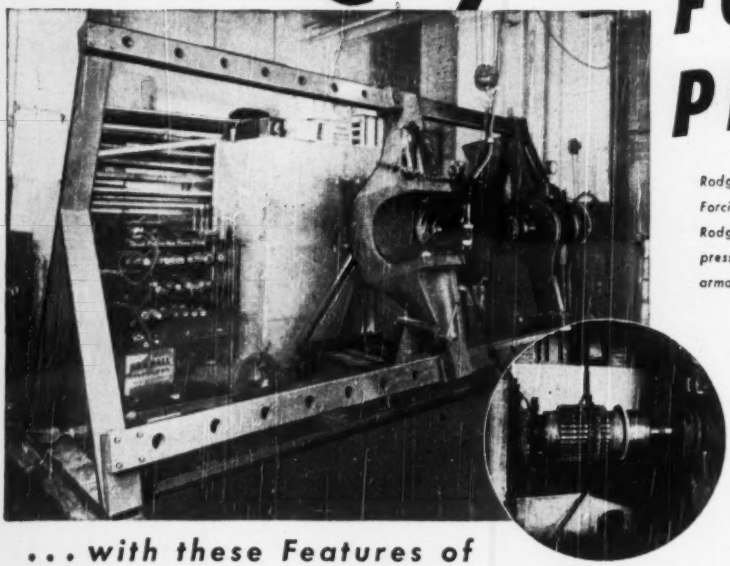
Butler Bin Gates
Next time replace with long-lived gates of Butler design. How about some now as a "reserve" against emergency?

MONT IT'S THR-R-RIFTY TO SEE THE BUTLER ENGINEER!

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

For Fast, Efficient Pressing Bending, Forming, Straightening...

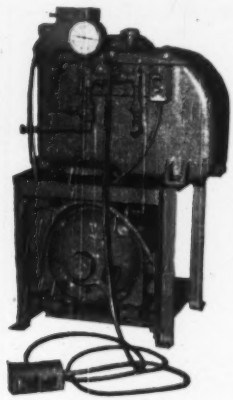
New Rodgers FORCING PRESSES



Rodgers 300 Ton, 75° Inclined, Stationary Forcing Press, one of many in the complete Rodgers line. In the application shown, the press is being used efficiently to press an armature shaft.

... with these Features of Construction and Operation

- **SEPARATE PUMPING UNITS**—Choose from individual hand-operated or power-driven pumps to operate any model Rodgers Forcing Press.
- **REMOTE CONTROL OF POWER PUMPS**—Operator can control press from any desired position.
- **REMOVABLE HYDRAULIC CYLINDER**—Cylinder is easily removed from head member to permit servicing or use for other power applications.
- **INDIVIDUAL FRAME UNITS**—Tracks, tension bars, abutment member and head member are all separate units to facilitate handling and erection of press.
- **EXPERTLY ENGINEERED AND CONSTRUCTED**—All units of Rodgers Forcing Presses are made strong, durable and dependable to give years of reliable service.



... Separate Power Pump

Select your press operating unit from hand-driven pumps or power-driven pumps. Shown is a Rodgers 2-cylinder Power Pump with remote control.

... In these Types and Sizes

Rodgers Versatile Forcing Presses are available in portable or stationary models—horizontal, vertical, 75° or 90° inclined—100 to 600 tons—with hand-operated or power-driven pumps. In this broad selection, you'll find the ideal press to meet your requirements.

Send for New Catalog...

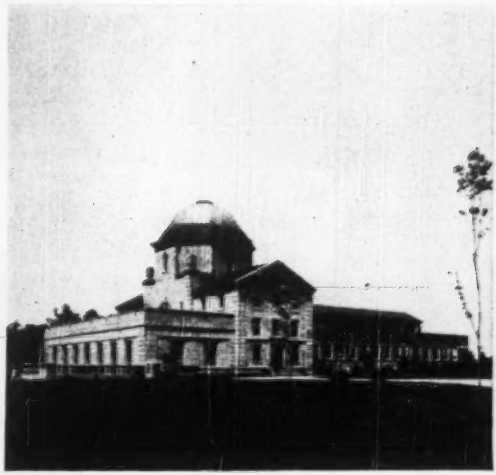
For full details and specifications on the complete line of Rodgers Forcing Presses send for Catalog 315.

HYDRAULICS MAKE THE WORLD MOVE

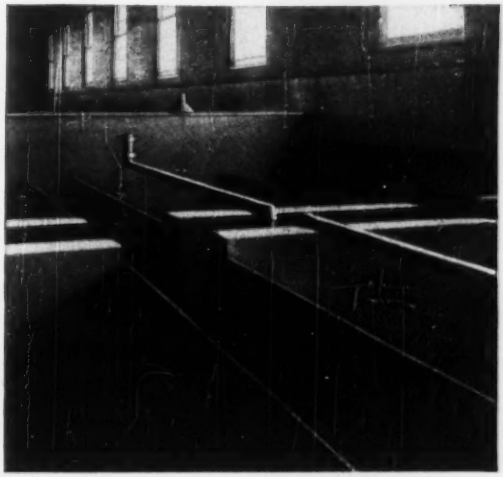
Rodgers Hydraulic, Inc.

7441 WALKER ST., ST. LOUIS PARK, MINNEAPOLIS, MINN.

HYDRAULIC POWER EQUIPMENT



West Pumping Station and Filtration Plant, Bureau of Water, Erie, Pa.



Water plant filter beds metallized with zinc to stop rust and corrosion.

Metallizing Checks Corrosion

at Bureau of Water, Erie, Pa.

Used As Far Back As 1930 To Protect Steel Surfaces Against Corrosion.

The Bureau of Water, Erie, Pa., started to use metallizing in 1930, when they sprayed zinc on all bolts and nuts used in the construction of a 72" dia. 8800 ft. intake. In 1932 a new filtration plant was placed in operation, but in only 18 months heavy corrosion was noted on the 110,000 gallon wash water tank interior. So they metallized the 32 ft. dia. x 19 ft. deep tank with .006" pure zinc. After six years no rusting had occurred, even though the tank interior is intermittently exposed to water and air.

Saved—Repair Costs and Nine Weeks' "Down" Time—Superintendent states that with ordinary methods of protection there would have been three periods of suspended service for the tank, each of them lasting for at least three weeks. "Now, however," he points out, "with no indications of a breakdown of the zinc coating, which has been in continuous operation for six years, we feel assured that the metallized surfaces will give many more years of perfect protection."

Other Jobs—This same user reports that metallizing has stopped corrosion on a number of other jobs done since the tank described above. These include steel filter troughs—some of which had already become so badly corroded that small holes had penetrated through the metal. These holes were filled with the sprayed metal at the time the coating was applied, thereby restoring to use troughs which otherwise would be considered worn out. They've also used metallizing to stop corrosion in boiler plant feed-water treating tanks, on steel ladders in basins and reservoirs, brace rods, sluice gates and, as user states, "all metal surfaces subject to rapid oxidation."

Further Information Available—Metallizing may help solve your corrosion problems. For further information, or the name of your nearest metallizing contractor, write:

FREE BULLETIN. Bulletin 62—"Stop Corrosion with Metallizing" pictures many different types of jobs, such as bridges, structural steel, barges, dam gates; includes spray test and life expectancy charts.

Metco—Reg. U. S. Pat. Off.

METALLIZING ENGINEERING CO., INC.
38-22 30TH STREET METCO LONG ISLAND CITY 1, N. Y.

R. J. McWaters
Metallizing Engineering Co., Inc.
38-22 30th St., Long Island City 1, New York

Please send me Bulletin 62. No obligation, of course.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

Daily Steel Deliveries to the Construction Industry

Wherever you are, Ryerson trucks are rolling your way every day . . . speeding shipments of every kind of construction steel from nearby stocks.

Reinforcing bars, structurals, plates, sheets, wire mesh—an endless range of kinds, shapes and sizes make up this daily stream of steel. In pounds and tons it flows to contractors and builders from the nationwide network of thirteen big Ryerson plants.

In reinforced concrete construction, Ryerson service saves you time by handling the complete job from setting plans to steel delivery with speed and accuracy. Bars are cut, bent and correctly tagged for easy placement. Deliveries are flexible to the changing needs of the job. Ryerson service also saves time by enabling you to concentrate all steel purchases at a single convenient source.

You can be sure of quick, accurate delivery from your nearby Ryerson plant; so call us next time you need steel from stock—reinforcing or any other product. We'll get it to you faster because we're coming your way every day.

*

Hi-Bond from Ryerson for Greater Grip

Unique scientific design gives Hi-Bond reinforcing bars a greater bonding grip in concrete. This test-proven grip results in stronger construction and increased resistance to the formation of tensile cracks. Ryerson plants in Chicago, Detroit, Cincinnati and Los Angeles carry Hi-Bond in stock for immediate shipment. Write for bulletin.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI
CLEVELAND • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

THE CONSTRUCTION WEEK

BIG STEEL TO EAST COAST?—Announcement that U. S. Steel has bought a 3,800-acre tract across the Delaware River from Trenton stirs up the speculation that Big Steel may be ready to build that east coast plant it's been rumored to have been planning. The speculation is tied to the effect of the basing point decision on Big Steel's competitive position in east coast steel markets, now that freight absorption is taboo. Highly-informed sources, though, don't get very excited about any near-future prospects for the plant. They point out that a steel plant is valueless without a raw material flow of about five tons for every ton of finished steel. And they add that a steel plant can be built in appreciably less time than raw material sources of such magnitude can be established. You can find informed people who are confident that Big Steel's ore supply for an east coast plant will take years to develop—once development starts. That would indicate, according to these sources, that construction on the Delaware site probably wouldn't begin until two years after development of ore sources for an east coast mill has begun. The mill isn't authorized, although it's been studied for years.

"UNFAIR" LISTS ARE FAIR—There's no secondary boycott involved if a union places a contractor on an "unfair" list—providing the union has a labor dispute with the contractor. That's what the National Labor Relations Board has ruled in a decision reversing a stand it took last March. A 3-2 majority, with Chairman Paul Herzog switching his vote, likened the "unfair" listing to picketing. Whatever impact such a listing may have upon clients or subcontractors—who might be considering the purchase of equipment or services from the "unfair" contractor—isn't important, even though Taft-Hartley has a stringent ban on secondary boycotts. Such a listing's psychological impact, NLRB ruled, is irrelevant.

REBER PLAN AGAIN—Funds to investigate the engineering feasibility of the Reber Plan to convert parts of San Francisco Bay into fresh water lakes (ENR Nov. 24, p.28) are almost certain after recent Senate committee hearings on the west coast. Pressure in favor of the plan came from an array of farmers, editors, and retired military officers. Some engineers seemed cautiously to favor the scheme, while other engineer-witnesses were definitely against it. However, all but two engineers agreed the plan should get a more thorough technical study—those opposed scarcely disguising their belief that such an investigation would be a kiss of death. If and when Congress appropriates the money, the Corps of Engineers will probably make the study.

PREVIEW—Economists are pretty sure there's no real danger about a big business drop this year—but they are concerned with rising unemployment. By 1952, they fear the steady rise could be serious, even with stable employment and production—improvements in efficiency and normal additions to the working force means that more than a million new jobs must be created annually to avoid an unemployment rise. You will hear a lot in coming months about the need for business to expand and make more jobs. And behind the talk will be the threat that if private capital doesn't do the job (as the government thinks it should) then government will do it.

FOR THE RECORD—There's $8,000,000 in cash and $25,000,000 in contract authority available to the General Services Administration's Bureau of Community Facilities for advance planning of public works. The money—available under Public Law 362 (81st Congress)—is being parcelled out to the states to build up the public-works shelf. Additionally, GSA has passed on to the Public Health Service an allocation (not an appropriation) of $20,000,000 for distribution to the states for planning stream-pollution prevention works. GSA has only $200,000 of its own (to be divided among 48 states) to aid this prevention planning program.

PROSPECTS—Looking over the record for signs and portents, Washington's pundits see little change upcoming in the second session of Congress. Interim elections have not changed the balance of power appreciably—ie., the Republican-Southern Democrat axis still can swing the weight in major matters, and there won't be too much change in the issues on which Mr. Truman will make his stands. One item that is seen as having good prospects, finally, is Senator O'Mahoney's bill on delivered pricing. It would lift some fog caused by the Supreme Court's cement-case decision.

EASIER CREDIT FOR HOMES—Home buyers will find it easier to get credit—with more government help—under administration plans for the new year. FHA mortgage insurance probably will be relaxed, to require smaller down payments and permit longer financing on homes under $10,000. Aim is to help middle-income families (left out on public housing).

THREE ON THE AISLE for 'TOP PERFORMANCE'

These tickets are typical of the many that W&T Equipment must earn during production. They are evidence that keen-eyed inspectors have tested and re-tested each part before accepting it for your job. They are thus your passes to "TOP PERFORMANCE" – the hit show of proven, dependable and economical chlorination in which W&T Chlorinators have starred for over 35 years.

It's no wonder that the show is a steady hit. Take a look at the "producers" background:

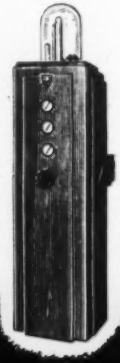
W&T research leads in such developments as the Visible Vacuum Principle, Break-Point Chlorination and the Residual Recorder.

W&T manufacturing facilities are equipped to handle, in stride, the precision required in chlorinator manufacturing.

W&T engineers select equipment from a complete line of chlorinators, hand tailor it to each job and then test it under actual job conditions before shipment.

W&T's field organization is conveniently located and always available to supervise the installation of equipment and render prompt service and technical assistance.

For your next job requiring chlorination or chemical feeding, say "W&T" and get a front row seat to "TOP PERFORMANCE."



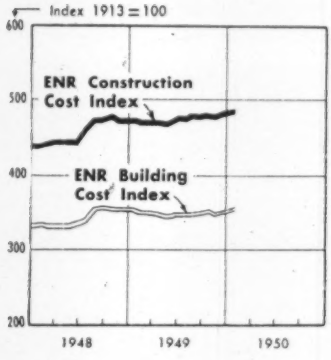
S-40

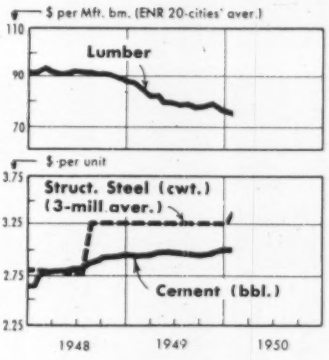
WALLACE & TIERNAN COMPANY, INC.

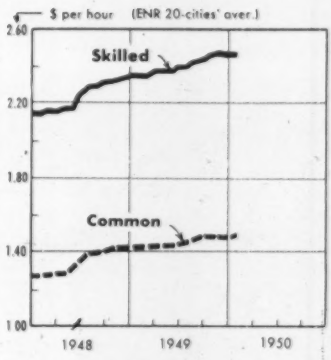
CHLORINE AND CHEMICAL CONTROL EQUIPMENT

NEWARK 1, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

JANUARY CONSTRUCTION BUSINESS REPORT







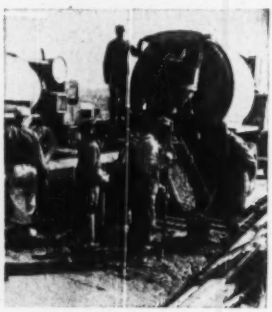
ENR INDEXES (1913 = 100)	Jan. '50	Dec. '49	% Change	Jan. '49	% Change
Construction Cost	484.74	480.32	+1	477.41	+ 2
Building Cost	356.09	353.07	+1	354.98	+ 0.3
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	2.955	2.957	0.0	2.960	− 0.2
Structural Steel, (3-mill aver.), per cwt	3.400	3.250	+5.0	3.250	+ 5.0
Sand, per ton	1.962	1.965	0.0	2.002	− 2.0
Lumber, 2x4 Fir, per M ft. bm	84.111	85.029	−1.0	94.625	−11.0
Lumber, 2x4 Pine, M ft. bm	74.683	75.233	−1.0	83.083	−10.0
Common brick, per M	27.856	27.763	+0.3	27.438	+ 2.0
Ready-mixed concrete, per c. y.	10.403	10.355	+0.4	10.259	+ 1.4
Structural Clay Tile, 3x12x12 Per M	132.867	131.755	+1.0	131.668	+ 1.0
WAGE RATES (20-cities' average)					
Common	1.485	1.478	+0.4	1.417	+ 5.0
Skilled (aver. 3 trades)	2.462	2.462	0.0	2.354	+ 5.0
Bricklayers	2.721	2.721	0.0	2.560	+ 6.2
Structural Ironworkers	2.426	2.426	0.0	2.339	+ 4.0
Carpenters	2.242	2.242	0.0	2.186	+ 3.0

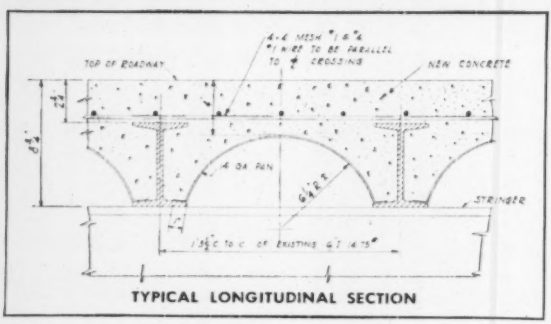
CONTRACTS AWARDED (thous.)	December 1949 (5-weeks)	December 1948 (5-weeks)	% Change†	Twelve Months 1949 (52 weeks)	Twelve Months 1948 (53 weeks)	% Change†
Total U. S. (ENR reported)	863,561	843,544	+ 2	8,157,403	7,219,387	+15
Private	380,433	505,899	− 25	3,862,238	3,581,444	+10
Public	483,128	337,645	+ 43	4,295,165	3,637,943	+20
Federal	255,075	71,744	+255	1,184,745	951,229	+27
ENR Constr. Volume Index, '13 = 100	310	304	+ 2	283	254	+11
NEW CONSTRUCTION CAPITAL						
Total	421,087	841,196	− 50	7,343,747	6,786,211	+10
State & Municipal Bond Sales	312,513	195,174	+ 60	3,040,711	2,033,502	+52
Corporate Security Sales	108,574	646,022	− 83	2,169,812	2,701,488	−18
Federal (non-federal work)				385,000	492,289	−22
Federal (federal work)				1,748,224	1,558,932	+12

MATERIAL SHIPMENTS & LABOR SUPPLY	November (N) October (O) 1949	1948	% Change	Eleven Months (11) Ten Months (10) 1949	1948	% Change
Cement, thous. bbls., Bu. of Mines	21,277(O)	20,324(O)	+ 5	177,294(10)	173,478(10)	+ 2
Fabr. Struc. Steel, thous. tons, AISC	112(N)	170(N)	−34	1,708(11)	1,812(11)	− 6
Lumber, mil. ft. bm., NLMA	2,903(O)	3,085(O)	− 6	25,788(10)	30,296(10)	−15
Lumber Prod., mil. ft. bm., NLMA	2,790(O)	3,369(O)	−17	26,084(10)	31,365(10)	−17
Contract Const. Employ., thous. BLS	2,245(N)	2,287(N)	− 2	Av. 2,163(11)	Av. 2,162(11)	0.0

† Computed on weekly average basis.

'INCOR' CONCRETE REPLACES GRID BRIDGE-DECK ON LONG ISLAND CITY APPROACH TO NEW YORK'S QUEENS-MIDTOWN TUNNEL





TYPICAL LONGITUDINAL SECTION

MIDTOWN Elevated Express Highway carries 11-million vehicles a year to and from Queens-Midtown Tunnel. Where this Highway crosses high above Dutch Kills, the steel-grid bridge-deck was hazardous when wet or icy—sand and salts fell through. For safety's sake, the City's DEPARTMENT OF PUBLIC WORKS decided to rebuild the deck with concrete.

EDGECLIFF CONSTRUCTION CORP., of Long Island City, rebuilt a lane at a time, to minimize motorists' inconvenience. Removing the grid sections, total 32 ft. by 1040 ft., required cutting 56,000 welds. Grids were lifted by crane, then permanent metal-pan forms were inserted between transverse I-beams, and mesh-reinforcing and concrete placed.

For durability and wear-resistance, and because much of the work was done in cold weather, 'INCOR'* AIR-ENTRAINING 24-HOUR CEMENT was used throughout. Gaining service strength in a fraction of the usual time, 'Incor' minimized freezing risk in this highly exposed location, where heat protection was out of the question.

Motorists were quick to notice the sure-grip of concrete under wheel. Further proof of the axiom that traffic safety *begins* with the pavement!

Reg. U. S. Pat. Off.

MIDTOWN HIGHWAY CROSSING—QUEENS COUNTY, NEW YORK CITY

Bridge paving rebuilt under supervison of:
DEPARTMENT OF PUBLIC WORKS, CITY OF NEW YORK

Consulting Engineers: **HARDESTY & HANOVER,** New York

Ready-Mix 'Incor' Air-Entraining Concrete:
TRANSIT-MIX CONCRETE CORPORATION, New York

Contractor: **EDGECLIFF CONSTRUCTION CORP.,** Long Island City

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON
CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS.
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK
ST. LOUIS • PHILADELPHIA • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,500,000 BARRELS ANNUAL CAPACITY

Safety on 1950 Construction

For the price of a dozen good cigars, engineers and contractors can secure a copy of the National Safety Council's newly developed volume of 58 "Safety Talks for Construction and Maintenance Foremen." Compiled by 31 recognized authorities in the construction industry, this challenging booklet is "must" reading for anyone interested in reducing the hazards of construction, with their resulting loss of life, loss of man-hours and crippling effect on productivity.

Unlike some safety manuals that deal exhaustively with a few phases of construction, this booklet covers everything from goggles to draglines. Anyone of the 58 punch-packing safety talks can be read in a few minutes, and the entire series can be read in less time than it takes to set a broken leg.

Although the safety talks are beamed directly to the workman—in simple, construction terms—top management will find much food for thought in them from the standpoint of higher productivity and lower costs through greater safety on the job.

More Basic Research Needed

Despite the fact that many millions of dollars are spent each year on research, the total is not as high as it should be, according to those who have made a careful study of the relation of research to the national economy. The President's Committee on Scientific Research, about two years ago, stated that by 1957 the federal government should be spending $250,000,000 a year on research in the basic sciences, chiefly in college laboratories. At that time, legislation to set up a National Science Foundation was being considered by Congress and appeared to have a fair chance of passage. The bills did not pass, however, and in view of the current concern in Congress over federal spending, the prospect for any large increase in federal contributions to research do not appear bright.

More recently, Linus Pauling, president of the American Chemical Society, called upon American industrial corporations to increase their contributions to basic research. Such research, he said, is lagging far behind development research, yet American industry has as great if not greater interest in such fundamental studies. Also, Prof. Pauling added, large contributions from industry will serve as a check on government domination of research.

There is much to be said in favor of Prof. Pauling's recommendation. As a means for protecting their supply of research personnel, if for no other reason, the large industries should be making regular contributions to college research. And there are many small industries, unable to conduct research of their own, which could profit materially by getting some near-by college to conduct laboratory studies of their peculiar problems. In the aggregate, the relatively small contributions that such companies could make to research would total to an impressive amount.

More basic research is needed. It is nowhere more necessary than in the civil engineering field and the industries that serve it. Indeed, compared to the mechanical, electrical and chemical fields, civil engineering makes a sorry showing in basic research under way. This is the more regrettable considering the possibilities in such fields as soil mechanics, waste treatment, aerodynamics, hydrology, corrosion and new materials to mention a few. Many colleges stand ready to aid in this work, but lack directives and funds. Private industry should stop, look and consider the opportunity that it is missing.

Soup to Nuts

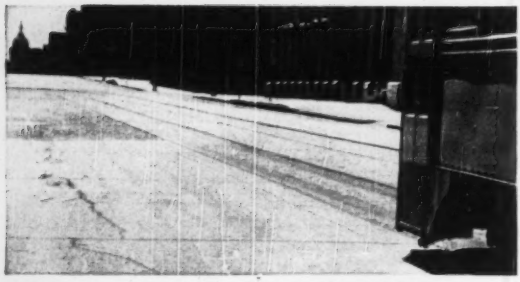
Engineers working with industrial waste treatment feasted on a healthy menu of their technical specialty, topped off by some broadly cultural dainties, at the Purdue University Fifth Industrial Waste Conference (ENR Dec. 15, 1949, p. 29). The program consisted of 49 prepared discussions given in two days. These were generally short, to allow time for discussion in the one hour allotted for each. And as many as eight concurrent sessions were held to give engineers interested in a particular type of waste an opportunity to learn what was happening at other plants. This arrangement also precluded the necessity of listening to papers not pertinent to one's specialty, particularly desirable in the very specialized field of industrial waste treatment.

All this is heavy fare for two full days, so the lunch and dinner sessions served up discussions of American foreign policy, of James Whitcomb Riley's poetry and of federal aid for education. The engineer listeners were stimulated and impressed by these presentations.

This injection of a few extraneous cultural subjects into a strictly technical program is a form of adult education that has much to recommend it. The Purdue meeting was not unique in this respect, but it afforded an extreme case, considering how highly technical is the subject of industrial waste treatment.

To Prof. Don E. Bloodgood, is due a sound round of applause not only for giving these regular pushes to a new engineering specialty, but to making the conferences broadly educational as well.

Engineering News-Record is a consolidation of Engineering News and Engineering Record, effected in 1917. The Contractor was consolidated with Engineering News Record in 1918. Engineering News was founded in 1874 as The Engineer and Surveyor, which title subsequently became The Engineer, Architect and Surveyor. Engineering News and American Railway Journal and finally Engineering News. Engineering Record was established in 1877 as the Plumber and Sanitary Engineer. Subsequently it became The Sanitary Engineer, Engineering and Building Record, and, finally, Engineering Record. All rights to the above titles are reserved.

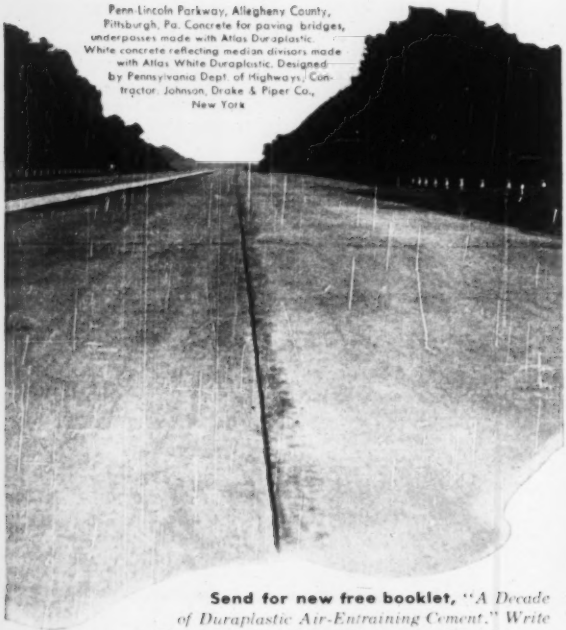


Ten Years Ago...

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section; *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown above as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today.... No doubt of *durability*... in concrete paving made with ATLAS DURAPLASTIC*



Penn-Lincoln Parkway, Allegheny County, Pittsburgh, Pa. Concrete for paving bridges, underpasses made with Atlas Duraplastic. White concrete reflecting median divisors made with Atlas White Duraplastic. Designed by Pennsylvania Dept. of Highways. Contractor, Johnson, Drake & Piper Co., New York

From its initial installation to the succeeding score upon score of successful paving installations over the past ten years, there is abundant evidence that Atlas Duraplastic cement fortifies concrete against freezing and thawing — renders it highly resistant to the scaling action of de-icing salts.

Clinching proof was revealed at the first session of the American Concrete Institute Convention held in New York in February, 1949 Devoted to "problems in concrete paving surface durability," the session recorded a significant unanimity of opinion that air-entrained concrete resists pavement scaling from salt treatment. A leading construction magazine commented, "... the use of entrained air, insofar as designers and contractors are concerned, would seem to admit of no more argument than the use of the water-cement ratio."

Experience shows Duraplastic (1) requires less mixing water for a given slump; (2) makes concrete more plastic, more cohesive, more uniform; (3) minimizes segregation and bleeding; (4) produces more workable concrete that dumps and screeds easily; (5) permits finishing closer to paver, and allows earlier protection for curing.

For pavement needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual changes in procedure.

Send for new free booklet, *"A Decade of Duraplastic Air-Entraining Cement." Write to Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17.*

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ENR-D-93

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

JANUARY 5, 1950 VOL. 144 NO. 1

Construction dollar volume sets new all-time records

Engineering News-Record estimates $17.9 billion total for 1949—Records $8.16 billion which was allocated for engineering construction alone

Elsie Eaves
Manager, Business News

Construction chalked up its biggest year on record—dollarwise—in 1949. But the record was only the fifth largest year in point of physical volume.

Total new construction started in 1949 is estimated by ENGINEERING NEWS-RECORD at $17.9 billion. Of this, $8.16 billion is engineering construction reported by ENR. Both of these figures top all previous records: The estimated total volume exceeds by 4 percent the all-time high, set in 1948. Engineering construction is 15 percent higher.

But in terms of actual structures, the 1949 production was lower than in some other years. The ENR construction costs index averaged 477 for 1949, compared with 461 in 1948. (1913 = 100). So the volume index for 1949 (dollar volume corrected for higher costs) is 283. This is the highest of any postwar year, 11 percent above 1948. But it is topped by 1928 with a volume index of 287, 1929 with 317, 1941 with 375 and 1942 with 471.

Actually, construction costs showed their greatest stability in 10 years, even though they declined in the first half of 1949 (for the first time since 1938), then stiffened in the second half. The year ended with the ENR construction cost index for December only 0.6 percent above December, 1948, and the ENR building cost index 0.7 percent below its value at the close of 1948.

Materials adequate

Construction materials were in adequate supply for the first time since the war's end. Lumber prices broke sharply—down 10 percent at year's end—and were the major reason for the construction cost decline. Brick and ready mixed concrete prices increased 1½ percent during the year; structural clay tile went up 2½ percent but sand, cement, and steel held with practically no change. (Steel, of course, broke this record in late December with $3 and $2 a ton increases in structural and reinforcing steel to start the new year.

Wage rates increased 5 percent during the year in the twenty cities reported by this journal. This was the smallest rise in labor costs since war restrictions were removed. Labor was in good supply.

Construction equipment, too, moved into a buyers' market during the year. Contractors could pick and choose what they wanted and get delivery when they wanted it.

Bids below estimates

With materials, labor and equipment readily available for the first time since the war, contractors could bid under reasonably predictable conditions. This resulted in a large number of bids below engineers' estimates; in the elimination of large contingency items in bids; and in greater reductions in selling prices for construction than the small reduction in cost of construction materials.

The results of these favorable conditions are a number of new records—housing for example. The buyers' strike that started late in 1948 carried into early 1949. But builders concentrated on lower-priced units, and they increased the ratio of multifamily or rental housing. Public housing also increased. The result was that total housing starts were up to 937,100 in November. The old, 25-year record of 937,000 starts in 1925 will drop behind by a large margin when the December starts are reported to round out the new 1949 record.

Mass housing, with a 37 percent gain over 1948, set a new record in the engineering construction reported by ENGINEERING NEWS-RECORD. Nonresidential commercial building increased 10 percent. This pushed the commercial buildings total up to $2.4 billion, the highest ever recorded by ENR. Public housing gained 116 percent. Other public buildings including schools and hospitals increased 41 percent. This pushed public building up to $1.7 billion, the highest postwar rate but below war records.

Sewage disposal at $277 million—a 24 percent gain over 1948—topped all previous records. Bridge construction, at $357 million (20 percent above 1948) also topped all previous records. Earthwork, irrigation and waterways broke existing records with a $524-million year, 3 percent over 1948. Highway construction never fully overcame its slow start and finished the year at $897 million, 8 per-

(Continued on page 32)

Heavy construction to rise 5 percent

The new year should see a further gain in engineering construction activity—a rise to $8.55 millions as reported by ENGINEERING NEWS-RECORD. This would be an increase of 5 percent. Total construction of all types should reach $17.7 million in 1950, 1 percent below the total volume estimated for 1949.

(The hazards of forecasting are evident in the scores from previous years. A year ago, for example, ENGINEERING NEWS-RECORD forecast a 10 percent increase in 1949 to $7.9 billion for engineering construction. When the final records were added, this increase actually was 15 percent to $8.16 billion. On total volume, ENR forecast a 4 percent increase in 1949 to $18.07 billion. This is now estimated at a 3 percent gain for a total of $17.9 billion.)

The $8.55 and $17.7 billion forecasts for 1950 are all dollar-volume estimates. Physical volume should follow this pattern fairly closely since the construction cost increases now in sight are relatively small, and major effort is being made all along the line to hold the cost line.

Labor will hold the key to what happens on costs. A few early small wage increases have been agreed on, some to become effective in January, some in April. To date, these are counterbalanced with agreements to hold the line. Living costs are still down. Last

(Continued on page 32)

CONSTRUCTION BUSINESS

December awards '49's third highest

Heavy construction volume in December was the third largest on record this year, averaging nearly $173 million worth of contract awards reported to ENGINEERING NEWS-RECORD weekly.

The 1949 total for all classes of heavy construction rose to an all-time high of $8,157 million by month's end, a 15 percent increase over the total for 1948.

Local public construction dropped off in December, but federal and private awards rose to fill the gap. State and municipal contracts averaging only $45,600,000 weekly, are the lowest on record since February, 24 percent below the average for the year. Federal works hit a postwar high of $51,000,000 a week, largely due to an award of $162 million for an atomic plant in Oak Ridge. And private volume at $76,000,000 was 2 percent over the year's average.

Highlight of the month's activity was the peacetime peak for public building, an average of $58,000,000 a week. This rate is 74 percent higher than the 1949 average. Commercial building was a near high for the year at $54,000,000 a week, only 3½ percent below September's high of $56,000,000 weekly, and 17 percent above the year's average. Industrial building at $13,000,000 weekly was 28 percent less than the average for this year, despite a 75 percent increase over November's weekly average.

Other major classifications of engineering construction fell short of their average 1949 award rate in December. Earthwork and drainage awards at $9,500,000 and waterworks at $3,700,000 made the best showing, only 6 and 8 percent respectively below the year's average. Highway construction, at the other extreme, was 30 percent below par at only $12,000,000 a week. Sewerage contracts of $3,900,000 a week were 27 percent lower than the '49 average; bridge building at $5,400,000 is 21 percent lower; and unclassified at $12,900,000, 16 percent lower.

New construction money from corporate, state and municipal security sales averaged $84,000,000 a week in December, of which $21,700,000 weekly was corporate, and $62,300,000 was state and municipal. Total construction capital derived from these sources and federal appropriations in 1949 stands at $7,343 million, 10 percent above the comparable 1948 figure, and higher than any other postwar year.

Highway materials prices above '48 in third quarter

Costs of materials on highway and bridge construction are running above last year, according to third quarter average quotations just released by the Bureau of Public Roads.

Almost without exception the basic items purchased by contractors cost more last quarter than in 1948 (see table). For instance, cement is up 36 cents a bbl. on bridge jobs, and 34 cents for highway work. Lumber remained $1 a Mbf above last year's average on bridge work, and $6 a Mbf higher on roads. Steel is also up, in one case as much as 1½ cents a pound.

Unit Cost to Contractors of Materials Used on Federal-aid Bridge & Roadway Projects Bureau of Public Roads

Item	Bridges 3rd/4 '49	Bridges '48	Roadways 3rd/4 '49	Roadways '48
Cement bbl	$3.36	$3.02	$2.92	$2.58
Aggreg. cy	2.74	2.58	2.32	2.15
R-mx. concr. cy	11.53	9.87	10.70	10.13
Bitum:				
Mat'ls, gal.	.21	.14	.12	.10
R-mx pvmt. ton	6.14	7.76	6.12	5.25
Lumber, Mbf	101.	100.	98.	92.
Wood piles, lf	.66	.56	.33	.40
Metal culv. lb	.09	.07	.12	.11
Steel: lb				
Reinforc'g	.058	.051	.063	.052
Structural	.081	.074	.107	.092
Petro. prod, gal	.23	.20	.20	.18
Explosives, lb	.21	.20	.16	.15

Prefab plant is opened

A dwelling a day is the production schedule of Mobilhome, the newest entrant into the west coast prefabrication market. The company's $50,000 plant in Los Angeles, recently dedicated, is planned to turn out, on a 600-ft-long production line, one-, two- and three-bedroom homes that meet FHA and GI standards. The builders say they can complete a new house in 12 days, and move it to waiting foundations by truck for occupancy two weeks after the starting date.

Buyers have their choice of five basic floor plans, and such details as exterior wood trim treatment and color, roof style, interior wall finishes, and bathroom and kitchen tiles. Construction includes floor joists 2x12, cross braced with steel, and specially designed wall sections. No prices have been announced.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—DECEMBER, 1949

Engineering News-Record reports continental U. S. Construction projects of the following minimum costs—*Waterworks exp'sion drainage and irrigation*, **$28,000**; *other public works*, **$50,000**; *industrial buildings*, **$68,000**; *other buildings*, **$250,000**

Five Weeks—Thousands of Dollars (000 Omitted)

	December, 1949 New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	U. S. Cumulative Twelve Months 1949 Total U. S.	1948 (52 weeks)	% Change '48-'49 Aver. Wk.	Canada Dec. 1949
Public Works										
Waterworks	337	1,861	1,837	2,036	1,962	10,271	18,304	207,228	208,658	+ 1	450
Sewerage	279	2,763	6,648	2,413	3,782	3,345	19,430	227,206	227,762	+ 24	721
Bridges	583	3,694	4,516	7,028	5,883	3,210	25,314	344,999	293,512	+ 20	386
Earthwork and waterways	40	172	2,730	1,152	6,471	36,964	47,529	524,170	519,963	+ 3	1,243
Streets and roads	2,536	7,080	20,379	26,761	14,399	9,731	60,806	897,238	795,857	+ 8	75
Public buildings, residential	7,084	...	2,612	2,239	1,240	331	13,526	367,468	173,666	+116	...
Other public buildings	2,830	44,139	184,024	15,029	16,273	14,081	276,376	1,368,180	987,566	+ 41	7,683
Unclassified	1,155	3,419	2,017	1,525	4,964	8,563	21,643	308,676	231,467	+ 36	2,931
Total public	14,844	63,048	224,763	38,783	54,994	86,696	483,128	4,295,165	3,637,943	+ 20	13,489
Federal government (included in above classifications)	343	22,950	166,380	988	13,217	51,197	255,075	1,184,745	951,229	+ 27	3,172
Private											
Bridges	...	...	1,501	...	...	54	1,555	11,580	9,143	+ 29	...
Industrial buildings	1,680	14,271	22,870	12,793	11,234	2,783	65,631	949,977	1,095,581	− 12	7,282
Com'l. buildings, residential	10,836	83,479	32,565	41,781	37,673	22,086	228,320	1,833,138	1,358,999	+ 37	3,377
Other commercial buildings	1,796	4,673	9,610	12,647	10,926	2,185	41,747	573,010	529,487	+ 10	4,666
Unclassified	23,015	1,738	1,424	2,094	13,815	494	43,180	494,533	588,240	− 14	10,303
Total private	37,837	104,061	67,970	69,315	73,648	27,602	380,433	3,862,238	3,581,444	+ 10	25,562
Total Engineering Construction:											
December, 1949 — 5 weeks	52,681	167,109	292,733	108,098	128,642	114,298	863,561	...	...	...	39,051
November, 1949 — 4 weeks	44,781	152,225	70,470	64,642	193,649	63,457	589,224	...	...	...	41,469
December, 1948 — 5 weeks	23,050	298,553	91,868	69,008	260,943	100,324	843,344	...	...	...	44,181
Twelve Months — 1949	391,181	2,068,398	1,365,065	1,046,169	2,097,743	1,188,847	...	8,157,403	...	+ 15	613,379
Twelve Months — 1948	322,898	1,960,853	1,080,686	859,549	1,873,750	1,091,651	...	...	7,219,387	...	520,450
% Change '48 to '49	+21	+6	+29	+24	+14	+11	...	...	...	...	+20

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 86, went to press.)

Steel Mill—Carnegie-Illinois Steel Co., subsidiary of United States Steel Corp., Pittsburgh, Pa., has acquired a 3,800 acre site on the Delaware River, at Falls Township, near Morrisville, Pa., for the construction of an east coast steel mill. It is estimated that plant would cost $900,000,000. Construction has not yet been authorized.

Ravenswood Housing—Caye Construction Co., Brooklyn, N. Y., has been awarded a $4,438,990 contract for Section 2 of the Ravenswood Housing Project, Long Island City, N. Y., by the New York Housing Authority, New York, N. Y. Foundations for these buildings are already underway. The total estimated cost of this section is $6,500,000.

Water Tunnel—S. A. Healy and Gargaro Co., Inc., Detroit, Mich., were low bidders at $5,587,937 when the Water Board, City of Detroit, Mich., opened bids December 22 for Contracts 2 to 5, for the Northeast Water Tunnel. The Gargaro Co., has work underway on the first section.

Hospital—Providence Hospital, Mobile, Ala., has extended date for taking bids to January 17 for constructing hospital at Mobile to cost $3,500,000. Charles H. McCauley, Birmingham, Ala., is architect.

Blakely Mountain Dam—U. S. Engineers, Vicksburg, Miss. will open bids February 9 for constructing the Blakely Mountain Dam and intake structure on Ouachita River, Garland Co., Arkansas. The work includes earth fill dam, reinforced concrete intake structures, stone protection, hoists, conduit linings, emergency and power bulkheads, trash rack rake, plugging diversion tunnels and gaging station.

Apartment—Jackson Heights Corp., Omaha, Neb., plans constructing $3,000,000 apartment in Omaha, Neb. Leo A. Daley, Omaha, is architect.

Bridge—Northern Pacific Railway Co., St Paul, Minn., plans bridge over the Missouri River near Bismarck, N. D., to cost about $3,500,000.

Hospital Buildings—Department of Mental Hygiene, State of New York, Albany, has extended bid opening to January 18 for building two infirmaries at Newark State School, Newark, N. Y. Estimated cost is $2,045,291. Young, Mosocowitz & Rosenberg, New York, N. Y. are architects. Bids will also be opened February 1 for hospital at State Homeopathic Hospital, at Middletown, N. Y., with a $4,500,000 estimated cost.

High School—District Commissioners, District of Columbia, Washington, D. C., will take bids January 24 for the Springarn High School to cost $3,600,000. Merrill A. Coe, Washington, D. C., is architect.

Residences—Hanson & Beatty Construction Co., South Euclid, O., will construct 200 residences at Lyndhurst, O., to cost about $3,200,000.

Grade Crossing Elimination—Bates & Rogers Construction Corp., Chicago, Ill., was low bidder for grade crossing elimination in Rochester, Monroe County, N. Y., when the New York State Department of Public Works, opened bids December 22, at $1,366,479.

Dwellings—William C. Warmington Construction Co., Los Angeles, and R. B. W. Construction Co., Temple City, Calif., will build dwellings at Whittier, Calif, to cost $2,700,000.

Waterworks and Sewers—The ratepayers of the Municipality of Ville Jacques Cartier, Que., have approved plans for waterworks and sewer system to cost about $2,000,000. J. A. Lalonde & Co., Outremont, Que., are engineers.

Hospital and Schools—Union County, Monroe, N. C., will hold bond election February 14 to vote on $1,000,000 for hospital at Monroe and $1,500,000 for four high schools.

Track Removal and Construction—Missouri Pacific R. R. Co., St. Louis, Mo., and City of St. Louis Board of Public Service, plan railroad track removal on Poplar St. and constructing track to Terminal Railroad Association Elevated Line north of Gratior St. between 7th and 8th Sts. to cost about $1,250,000.

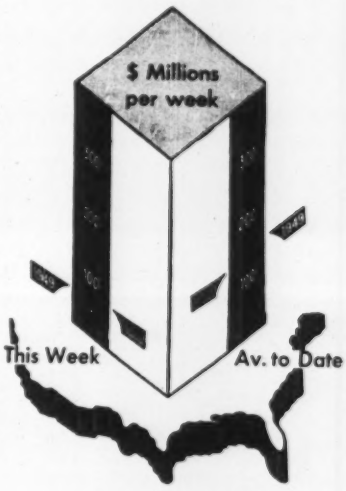
Overpasses—Lynn Construction Co., New York, N. Y., has been awarded contract for completing viaduct overpasses between Franklin D. Roosevelt Drive, First Ave., 42nd to 48th Sts., near united Nations Building, New York, N. Y., by the President of Manhattan Boro, New York, N. Y., at $1,019,514.

Court House—Board Supervisors Marathon County, Wausau, Wis., plans court house to cost $1,500,000. Childs & Smith, Chicago, Ill., are architects on the project.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Dec. '49	480.32	230.89
Building Cost	Dec. '49	353.07	190.86
Volume	Nov. '49	265	116



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Dec. 29 1949	Cumulative 1949 (52 wks.)	Cumulative 1948 (52 wks.)	% chge av.wk.
Federal	Figures not available			
State & Mun.	"	"	"	
Total Public	Figures not available			
Total Private	"	"	"	
U. S. Total	Figures not available			

Contracts by type of work

	This Week	Cumulative 1949 (52 wks.)	Cumulative 1948 (52 wks.)	% chge av.wk.
Waterworks	Figures not available			
Sewerage	"	"	"	
Bridges	"	"	"	
Highways	"	"	"	
Earthwork, Waterways	"	"	"	
Buildings,				
Public	"	"	"	
Industrial	"	"	"	
Commercial	"	"	"	
Unclassified	"	"	"	

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (52 wks.)	Cumulative 1948 (52 wks.)	% chge av.wk.
NON-FEDERAL	Figures not available		
Corporate Securities	"	"	"
State and Municipal	"	"	"
U. N. Building Loan	"	"	"
Federal-Aid-Highway	"	"	"
Federal	"	"	"
Total Capital	Figures not available		

Heavy construction to rise 5 percent

(Continued from page 29)

year, 55 percent of union building trades workers got increases, 45 percent held the line. Such increases as do go through for the year 1950 should be as moderate as those agreed on in 1949.

Materials production took care of 1949 construction volume with capacity to spare; so the increased volume forecast for heavy construction should be handled comfortably with no upward pressure on prices due to shortages. Predictable and dependable deliveries of materials and equipment will continue to improve construction productivity.

The increased volume forecast for 1950 continues the trend, predominant in 1949, of higher activity on public works, with a good gain expected in highway construction in 1950. On engineering construction, public work is expected to increase 16 percent, private construction to fall off about 8 percent.

This anticipates a further increase in public housing awards and a decline in privately financed housing. Industrial building is expected to drop off about 15 percent. Non-residential commercial construction may hold its own to keep up with the geographical shifts caused by major housing developments. But new business formations are down where they are not replacing discontinued businesses, so pressure for new construction that came in previous years from increasing numbers of new businesses started is lacking.

The proposed engineering construction backlog topped $46.75 billion in November, 1949, up $3.5 billion from December, 1948. December, 1949, figures are not yet available. As a whole, new projects are still coming into the backlog in higher volume than others are coming out to go under construction. On waterworks and sewerage, however, the proposed construction backlog backed up a little in 1949 as more projects advanced to active contract status than were replaced by new proposed work. But this large reserve or measured backlog of needed construction projects supports the 5 percent increase in engineering construction forecast for 1950, and labels it conservative.

Forecasts by other construction crystal ball gazers include:

U. S. Departments of Labor and Commerce forecast $19.25 billion for 1950, no change from their revised estimates for 1949 and 2.5 percent above their revised estimated total for 1948. In releasing these estimates of total construction put in place, they announce pending revisions and additions which will raise these $19.25 billion estimates for 1949 and 1950 by as much as $3 to $4 billion. These Commerce-Labor forecasts expect public construction to increase 18 percent, private construction to decrease 7 percent.

The Producers' Council, Inc., expects 1950 to duplicate the estimated $19 billion record of 1949 work put in place, with public construction higher than last year, private down somewhat. This national organization of building product manufacturers expects building costs to remain relatively stable, with the average for 1950 no higher and perhaps slightly lower than that prevailing at the close of 1949. It also predicts, "production of all kinds of building materials and equipment will be sufficient to meet any probable demand."

F. W. Dodge Corp. expects, in 1950, a 6 percent drop from the $9.9 billion 1949 total of construction it has reported in the 37 states east of the Rockies. This would average an 8 percent increase in public construction with a 10 percent decrease in private building.

Industry sets new record

(Continued from page 29)

cent behind the all-time high record of 1948.

Public construction as a whole topped 1948 by 20 percent. Federal engineering construction was up 27 percent. Private engineering construction was 10 percent higher than in 1948.

Industrial building, including public utilities, held up during the first half but sagged in the second half to finish the year at $950 million, 12 percent below the high volume of 1948. Private unclassified construction slid back 14 percent from the high 1948 rate.

Money plentiful

New money for construction came into the market freely. State and municipal bond sales to finance construction totalled $2.7 billion for the year, an increase of 52 percent. Federal appropriations for construction are 12 percent higher than in 1948. Corporate security sales to finance construction were high during the first half but slumped sharply in the last half and finished the year at $2.2 billion, 18 percent below the 1948 record. New capital as a whole topped 1948 by 10 percent.

ARBA challenges AGC on union shop voting

Seeks exemption from Denham's ruling waiving elections under Taft-Hartley Act for construction industry

The Highway Contractors' Division of the American Road Builders' Association last week (Dec. 29) registered strong objection to the waiving of union shop elections on highway contracts. In a letter to Robert M. Denham, general counsel of the National Labor Relations Board, Burton F. Miller, managing director of the ARBA contractors' division, asked Denham to make an exception of highway construction and exclude it from the administrative procedure announced Dec. 19 at a public hearing (ENR, Dec. 22, p. 23). Under the proposed procedure, union shop elections required by the Taft-Hartley Act would be dispensed with on construction jobs.

In the absence of Miller from Washington, basic reasons behind the ARBA request could not be established definitely. Miller's letter to Denham stated broadly that "to lay down policy and procedures equally applicable to the entire construction industry will only result in further confusion and disruption of amiable labor relations."

Affects union labor only

Specifically, open-shop highway contractors do not want to be put in a position where they might have to grant a union shop without an election. Denham himself sees no lurking danger of such an eventuality. The new policy in reality applies only to construction projects that employ union labor—usually under the customary contract between the employer and the unions. On these jobs, elections would be almost meaningless, even if it were possible to hold them. Ordinarily, labor moves too frequently from project to project to permit the holding of an election.

On open-shop jobs, elections are equally impossible to hold. If it were not for this fact, some contractors point out, the AFL Building and Construction Trades Department would have been sacrificing a valuable right in agreeing to the new Denham policy.

Because no open-shop job can be made union without an election, these contractor observers see no possibility of an employer's losing any protection under the adopted procedure.

As a second point, ARBA highway contractors make the valid argument that Denham has no authority under the Taft-Hartley law to waive union-shop elections.

Construction of tramway ok'd; cost has tripled

Construction on the Mount San Jacinto aerial tramway near Palm Springs, Cal. is expected to be underway by next spring.

The project, originally estimated to cost $3,000,000, is now planned as a $9,000,000 development. (ENR, Nov. 29, 1945, vol. p. 709). It will transport skiers and tourists from a 2,638-ft. elevation to a terminal at 8,515 ft.

Engineering designs recently were completed under the direction of Gordon Bannerman, of the American Steel & Wire Co. His firm, along with Morrison-Knudsen and Western Consolidated Steel, will have the major construction contracts. About $200,000 has been spent in studies.

The tramway lift will be made in two stages with a total length of 13,131 ft. Each stage will have two 54-passenger cars. These will be suspended from 2¼-in. dia. locked-coil, stationary-track cables. Cars will move at a maximum speed of 1,200 ft. per min. Each stage will have three steel support towers between terminals. A 4-mi. private road will be built over which trolley coaches will bring passengers from Palm Springs to the foot of the tramway.

Montana board reversed on road contract award

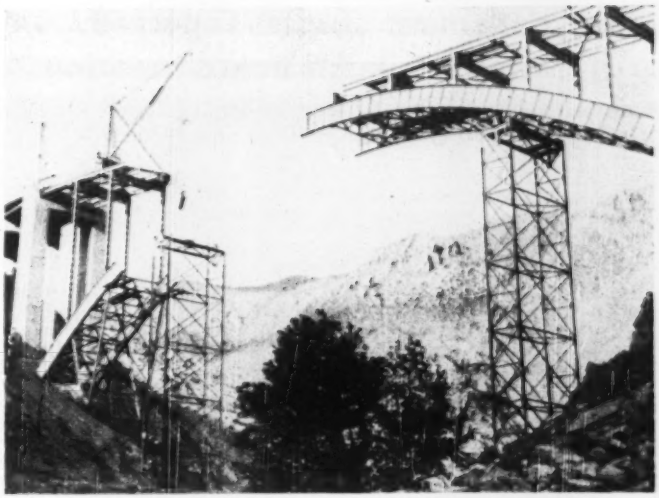
A Montana agency supervising contract awards has been ordered to cancel two street paving contracts it awarded the second low bidder.

A district judge directed the state board of examiners, composed of the governor, the attorney general and the state secretary, to award the contracts instead to the low bidder, Blacktop Construction Co., of Billings. The award had been made to Standard Construction Co., in Bozeman.

Standard's bids were $16,055 and $12,865 for two jobs at Bozeman. Blacktop bid $15,334 and $12,226. In awarding the contract to Standard, Governor John W. Bonner said Blacktop was experiencing "difficulty with organized labor."

"As long as I am governor," Bonner said, "I will not tolerate non-union construction."

Judge George W. Padbury ordered the board to "cancel and annul the pretended fraudulent contract . . . made with Standard Construction Co." Since that time, he has postponed four times the date of a court hearing at which the examiners board might show cause why it should not cancel its award. The latest hearing date to be set is Jan. 9.



ARIZONA TAMES MOUNTAINS—Queen Creek Bridge, on Route 60, helps Arizona eliminate some of its worst mountain driving. It's one of the more spectacular examples of progress as . . .

Arizona hits bridge-building peak

More than $1,500,000 worth of bridges and overpasses have been opened to Arizona traffic in recent months. Bridge building in the state is at an all-time peak.

Now under construction and nearing completion, or to be placed under contract before the end of the fiscal year, is another $4,127,400 worth, according to W. C. Lefebvre, state highway engineer.

Largest of the recent projects was the new bridge and modification of the old bridge over the Salt River at Phoenix, completed at a cost of more than $800,000.

Most spectacular was construction of the Pinto and Queen creek bridges on U. S. 60. Built by Fisher Contracting Co. and Allison Steel Co., both of Phoenix, they cost $660,000 and $440,000 respectively. Both have 30-ft. roadways.

Pinto bridge is 713 ft. long with a main span of 350 ft. and a 94-ft. rise to the arch. It is 170 ft. above streambed.

Queen Creek, still under construction, is 651 ft. long and also has a 350-ft. main arch. Both of the structures were designed by Ralph Hoffman, highway department bridge engineer.

Two other big bridges recently completed are on a new route between Wickenburg and Kingman, linking central and northwestern Arizona over a pioneer alignment.

Spanning Santa Maria River and Big Sandy wash, they were constructed by H. L. Royden of Phoenix at a cost of $178,000 and $317,000, respectively. Santa Maria bridge is a 637-ft. steel girder span with reinforced concrete deck. The Big Sandy is 825 ft. long and carries a 26-ft. concrete roadway on eight 100 ft. steel girder spans.

All of these projects will be dwarfed by Burro creek suspension bridge, now on the drawing boards. Also on the Kingman-Wickenburg alignment, the bridge will be 875 ft. long, making it the largest in the state. It will be 400 ft. above streambed, second in height in the state only to Navajo bridge over the Colorado River at Lee Ferry.

Recent new bridges include a $362,000 overpass at Williams, and a $225,000 steel girder viaduct at Box Canyon, 14 mi. west of the New Mexico line.

Los Angeles site bought for $10 million store

The Los Angeles Furniture Mart Building Co., which plans to start construction by next spring on what is predicted will be the largest building west of Chicago, has purchased a $500,000 site between Broadway and Hill Streets, near Washington Blvd.

Plans call for a 2,000,000-sq. ft. building to cost more than $10,000,000. It will consist of two equal units, the first of these estimated to cost about $6,000,000.

Many pavement studies reported at Highway Research Board meeting

A rational method for designing flexible pavements for highways proposed, also a fast method for checking asphalt mixes

V. T. Boughton
Senior Associate Editor

Sustained interest in the many unanswered questions relating to flexible pavements is shown by the number of papers on pavement studies presented at the annual meeting of the Highway Research Board in Washington, Dec. 13-16. Also reported were the findings of a 10-year test of continuously reinforced concrete pavements and recent experiments to determine the effect of adding small quantities of rubber to bituminous surfacing.

This report supplements the one on opening sessions of the meeting published in the issue of Dec. 29, p. 12.

Studies of bearing capacity

A relatively new approach to the general problem of the bearing capacity of soils was described by Prof. H. E. Davis, of the University of California in a paper by himself and R. J. Woodward. Small scale experiments were made with model footings resting on dry sand in which lead shot had been mixed. The sheared zones that developed under load were studied by means of successive X-ray photograph, movement of the shot resulted in slight changes in the density of the photographs.

On the basis of these observations the authors calculated the theoretical bearing capacity of the footings, allowing for the increase in normal pressure on the surface of failure due to the load that would be produced by the weight of the wedge of failure. Results so obtained agreed with observed values much more closely than values calculated by commonly accepted formulas.

Another study of stress distribution, made at the Waterways Experiment Station, Vicksburg, Miss., was the subject of a paper by Charles R. Foster and S. M. Fergus. It is the first stage of a comprehensive program on stress distribution and relates to the simplest possible case, distribution through a homogeneous soil. Subsequent steps will cover two-layer and three-layer systems.

The current study, which was made on a weathered loess from the Vicksburg area, revealed a remarkable similitude between the distribution pattern of measured stresses and the pattern indicated by the elastic theory.

A rational method for the design of flexible pavement, developed by Norman W. McLeod, engineering consultant to the Canadian Department of Transport, as a result of pavement studies made for the department (ENR April 28, 1949, p 42), was outlined by Mr. McLeod. In it he undertakes to provide a means for determining the load-supporting strengths of bituminous mixture on a pounds-per-square-inch basis. Detail of this method will be published in a subsequent issue of ENR.

Traffic accident studies

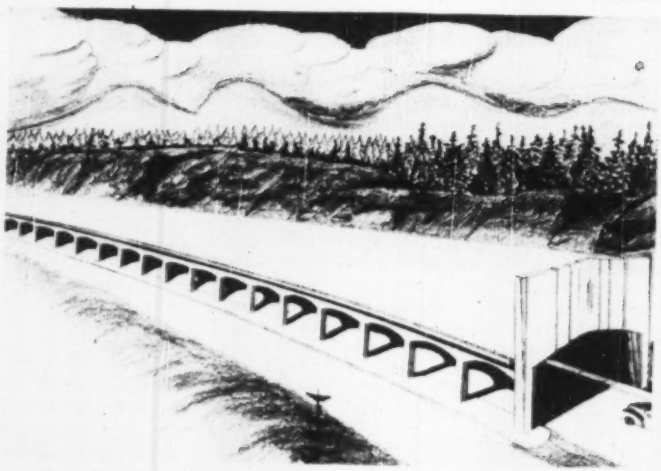
Use of accident records as a means for demonstrating the value of improved highways to the public was advocated in a paper by Roy E. Jorgensen and Robert G. Mitchell, of the Connecticut Highway Department. These records, when compiled in such a way as to show which accidents are chargeable to highway deficiencies, also have been found to be of great help in programming new work. Accident rates have been compiled for roads built to the state's standards in each of the traffic-volume groups into which all highways in Connecticut are divided. These rates are set over against the accident rates on unimproved roads in the same traffic volume class to demonstrate probable savings due to accident reduction.

Conclusions from a 10-year study of continuously reinforced concrete pavement conducted cooperatively by the Bureau of Public Roads and the Indiana Highway Commission were presented by Harry D. Cashell and Sanford W. Benham, research engineers for these agencies. Completed late in 1938, the pavement is a 9-7-9, thickened-edge type, 20 ft. wide and 6 miles long, laid near Stilesville, Ind., as part of the east-bound lanes of U. S. 40. Sections ranged in length from 20 ft. up to 1,310.

Maximum steel stresses were intended to be such that the elastic limit of the reinforcing would be approached in the longest section of each group, producing under repeated stressing, inelastic elongation with consequent opening of cracks. The shorter sections were separated by conventional dowel-type joints, and bridge-type joints were used between the longer sections where large movement might take place.

Space limitations do not permit enumeration of all the findings and conclusions. Length changes were not proportional to the length of section, and the central regions of sections over 800 ft. long were completely restrained during daily length changes. Length changes of a permanent nature occurred in all sections.

The rate of crack development was most pronounced during the early life of the pavement. In the longer, and more heavily reinforced sections, many



KEEPS HIGHWAYS SAFE, OPEN—Washington's Highway Department will ask bids early next year on construction of this snowshed on the Snoqualmie Pass Highway, in the Cascade Mountains. Retaining walls are to be of reinforced concrete poured in place, the roof of reinforced, pre-cast concrete. It'll be 1,300 ft. long, on a curve where the greatest trouble has been from snow slides. Road will be widened to four lanes, the shed covering the inner two.

fine cracks developed at frequent intervals, but the sections have remained strong, durable structural units. Repetition of load had only a slight effect on crack development. There was, however, more superficial damage to crack edges in the heavily traveled lanes. Longitudinal reinforcing held all cracks closed except in the section reinforced with 32-lb. wire fabric, where some steel broke, probably from shear. Pumping was completely absent at the vast number of transverse cracks.

Rubber in pavements

Tests to determine the skid resistance qualities of bituminous pavements to which small quantities of rubber were added, were made this year in Virginia. The first test section was constructed in May, 1949, (ENR July 7, p. 52) and the other two in September. In Section 1, powdered natural rubber was added to both the bituminous concrete and the wearing surface; Section 2 was a similar two-layer pavement to which powdered reclaimed rubber was added; and the third section was a seal treatment with a cut-back asphalt to which powdered natural rubber was added in the distributor. Identical sections without rubber also were constructed for comparison.

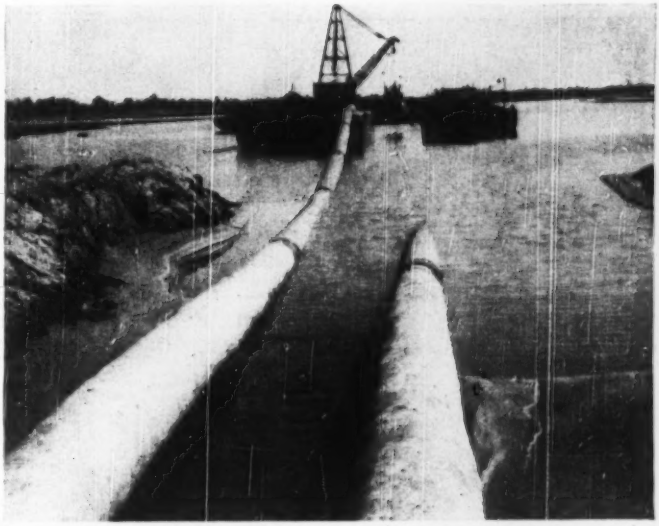
Skid tests, both wet and dry, were made on Section 1 shortly after it was laid and another six months later. In the initial test under wet conditions, only a slight beneficial effect was produced by the rubber. Stopping distance at 40 mph. was reduced from 93.7 to 87.9 ft. However, at the end of six months the control section had lost some of its skid resistance so that its stopping distance was 101.2 whereas the distance along the rubber section was almost unchanged, 87.5 ft.

Only one test was made on the seal-coat sections. It showed a slight beneficial effect for the rubber treated surface, a reduction of 3 ft. at 40 mph.

These test studies were reported by Tilton E. Shelburne and R. L. Sheppe of the Virginia Highway Department.

Glass beads in traffic stripes

Wide variations in the quality of glass beads use to improve the night visibility of traffic stripes were found in studies conducted in Missouri. Eight commercial varieties of beads were tested by V. H. Lyon and D. L. Robinson of the Missouri Highway Department in controlled field tests in which a night visibility meter was used. Four had a low silica content, about 27%, and four were silica-soda-lime glasses of normal (high) silica content.



NEW PIPELINE PUSHED ACROSS MISSISSIPPI—The $56,000,000 crude oil pipeline being built from Longview, Tex., to Lima, O., by the Mid-Valley Pipeline Co., crossed the Mississippi River in a mile-long jump at Mayersville, Miss. Two 20-in. lines were laid in twin furrows 15 ft. below the river's deepest part. They were encased in an asphalt-sand-asbestos coating and two in. of reinforced concrete. Pipe work on the crossing was done by The Latex Construction Co., Houston, Tex.

The low silica beads had consistently higher indexes of refraction than the normal types and higher initial reflectance values. One of the normal glasses was structurally weak.

Reflectance was maintained better by beads graded from coarse to fine, yet an excessive graduation resulted in an increase in bead loss. On the pavement, a film thickness of about 18 mils and a bead application of 5 to 6 pounds per gallon seemed to give the best results.

Quick test for asphalt mixes

Apparatus for making stability tests of asphaltic concrete mixture right in the hot-mix plant in a matter of ten minutes has been developed at the Iowa Experiment Station.

Although still considered to be in the development stage, the apparatus has given very satisfactory results, according to Ting Ye Chu, research associate at the station, and Prof. M. G. Spangler. Its chief purpose is to eliminate the loss of a day or more under prevailing practice between the time a mix is produced at the plant and a determination of its stability in a nearby laboratory.

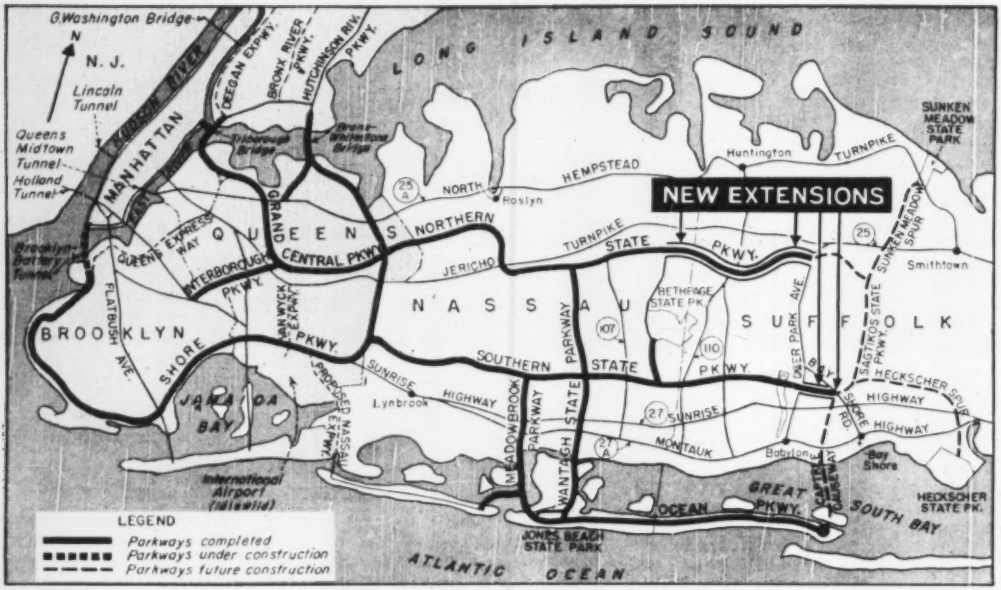
A description of the apparatus will be given in a subsequent issue.

The possibilities of testing concrete pavements by sonic methods for evidence of deterioration were discussed by W. J. Cheesman of the Hydro-Electric Power Commission of Ontario. The commission has been highly successful in testing concrete in its dams with a sonoscope developed for that purpose. The same apparatus has been used experimentally on old concrete pavements in Ontario. By applying the transmitter at the edge of the slab, sound waves can be picked up by the receiver at any point on the pavement surface. When the velocity of the sound thus measured falls below 12,000 to 10,000 ft. per sec., incipient deterioration is indicated.

W. J. Arndt, of the Kansas Highway Department, reported that they are using the old sonic equipment of the Portland Cement Association to test concrete in pavements made with three types of cement. They begin taking readings when the concrete is only three hours old. These studies have been in progress for three months.

Roadside development

A variety of subjects came up for discussion in the sessions devoted to roadside development. H. J. Neale, chairman of the Committee on Roadside Development, pointed to the large reductions that can be made in maintenance costs by proper attention to slopes in cuts and on fills during construction. Needing further study, he said, is how to build shoulders so that they will remain at the level of the pavement. This is important both from a maintenance and safety angle.



Reaching out from New York City to provide safe travel at reasonable speeds . . .

Long Island Parkways Keep Growing

WITH 93 MILES OF PARKWAY completed to date in Nassau and Suffolk counties, the Long Island State Park Commission is about to make the total 97 miles, through another 4-mile extension to be opened shortly, and has plans completed for the entire 130-mile projected system.

A new 24-mile addition to the Southern State Parkway, opened November 14, cost $2,000,000 and brought the route's eastern end from Deer Park Ave., north of Babylon to Bay Shore Road, where it will connect with the proposed Sagtikos-Heckscher and Captree State parkways.

On the Northern State Parkway five of nine miles of extension were opened Dec. 19, and the remainder is in final stages of construction. Paving is completed, and only landscaping remains to be done before the whole $7,000,000 section is in service. The eastern part will bring the route to Deer Park Ave. and should be in use in late winter or early spring, depending upon how snows affect completion of the final grading and planting.

Cost of these present extensions is running about $700,000 per mile as compared to $400,000 before the war. Highway overpasses—vertical-leg and elliptical-arch concrete rigid frames with stone facing—now cost an average of $150,000 each, compared to $80,000 prewar. Grading and paving costs have gone up some 70 percent since prewar, according to Long Island State Park Commission engineers.

For this increase in cost per mile, Long Island is getting better, safer parkways now than in former years. Twenty years ago the four-lane road was 40 ft. wide, with opposing traffic lanes undivided. Subsequently it was 42 ft. then 44 ft. Today's extensions to the system have two separated 25-ft.-roadways—each with a 12-ft. inside lane and a 13-ft. passing lane. Sight distances are maximum possible on the new stretches of parkway where 3.3 percent is the steepest grade and no curve radius goes below 2,500 ft. Right-of-way, protected by zoning and anti-billboard laws, averages 300 ft.

Constant research and long experience in building safety into highways are evidenced in the new extensions. Safety features, mostly developed in prewar years (ENR Dec. 15, 1938, Vol. p. 764) include:

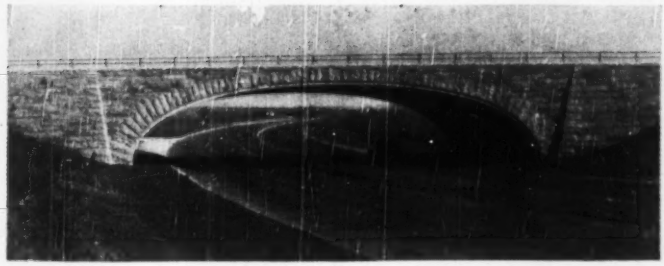
Separation of opposing lanes, mountable white curbs to contrast with pavements darkened by carbon black; single-lane ingress and egress; acceleration and deceleration lanes of light colored pavement at entrances and exits; improved lighting; pedestrian walks; grade crossing elimination, and disabled-car shoulders.

New safety features

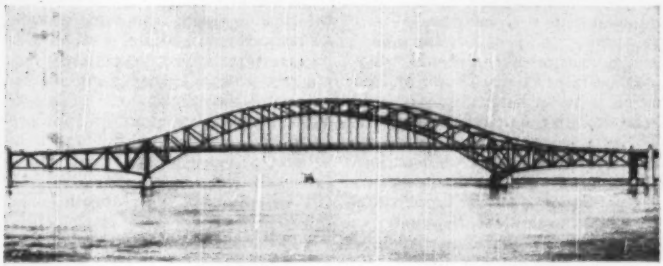
Added to these features, the new extensions have more legible signs at exits, wider shoulders for disabled cars, 12 ft. instead of 8 ft., and higher lighting (where provided), 23 ft. above the roadway compared to 18 ft. formerly. Gas stations, appropriately designed, are built along the system.

Seemingly minor changes add up to an obvious and strenuous effort toward greater safety in parkway travel. Intersections—as a source and site of accidents—have been eliminated. Head-on collisions are being cut out by separating opposing traffic lanes. Pedestrians are kept off the road by provision of foot paths and level grass shoulders—as well as by law. In recognition of the number of rear-end accidents, the wide shoulder and mountable curb have been developed to encourage drivers who must stop, to get off the pavement. Signs designed for easy, fast reading prevent indecision and short stops at exits. All design improvements aim at comfortable, convenient travel at reasonable speeds.

Long Island State Parkway engineers review daily police reports on traffic accidents, and can quote accident



OVERPASSES now cost twice their prewar price. Costs are high, but so is quality.



CAPTREE BRIDGE, with a 600-ft. center span, will link causeway approaches at the middle of Great South Bay. Approach-fill contract is to be let early this year.

CENTER CURB put on 14½ miles in '5(will make entire system divided parkway

rates. They proudly report their system now has two fatal accidents per hundred million vehicle-miles, as opposed to the nation's overall rate, recently about eight. Basing their speed policy on the number of fatal accidents that are blamed on speeding (10,000 out of 32,000 in 1948) they feel justified in holding to a 40 mph. legal operating speed on roads designed for 60 mph.

The low accident rate is especially significant in view of the large volume of traffic using the parkways. Over 10,000,000 cars per year cross each of the system's two western ends at the city line. Traffic on the farthest eastern section is about 2,000,000 vehicles per year.

This heavy traffic and the age of some sections have had their effect on pavement. Much of that laid over 20 years ago on the Southern State Parkway (first section of this was opened Nov. 6, 1927), is now being given a new bituminous surface. And while many lengths of concrete pavement nearly as old are standing up very well, engineers of the commission believe that eventually the entire system probably will be topped with bituminous paving. On new extensions, overhead bridges are being built with 11-ft. 2½-in. minimum clearance at the curb-line instead of 11 ft.—as provision for future addition of 2½-in. thick blacktop.

In the course of repaving four miles of the old Southern State Parkway the commission is widening it 3 ft. on each side and building a 14-inch high dividing center curb of concrete and 5-in. steel pipe (cost: $7 per lin. ft.). It is planned to install this dividing curb along 8 more miles of the Southern State and 6½ miles of the Northern State next year; the entire length of the system will then be divided highway.

The year ahead

Next year will also see extensive new construction eastward. A contract for approach fill for Captree Causeway across the Great South Bay is to be let early in 1950. Fills on each shore of the bay will require 600,000 cu. yd. dredged from the bay bottom. A 10,800-ft. length of causeway on concrete piles and piers will connect dredged fill approaches, and at the causeway's center a steel arch bridge with 600-ft. center span will cross 60 ft. above mean high water. A 500-ft. long bridge, including a 100-ft. bascule span 30-ft. high, will be built over the State Boat Channel at Captree extension's southern end.

Last large project planned for 1950 is grading, drainage and construction of nine grade separation structures for nine additional parkway miles—the final three miles of the Northern State and six-mile Sagtikos State Parkway to connect Northern State with Southern State. Paving of this final connecting link is planned for 1951.

Completion of these two projects—the Captree Causeway and the Northern-Sagtikos link—will finish up the entire system with the exception of two short spurs. One of these, the Sunken Meadow Spur, will run for seven miles from the east end of Northern State to Sunken Meadow State Park—already being enlarged—on Long Island Sound. The other, the Heckscher Spur, will extend ten miles, from the east end of Southern State to Heckscher State Park on Great South Bay. Studies for additional facilities in the entire state park system on Long Island are underway in anticipation of increased usage because of the new parkway extensions, particularly at Jones Beach State Park where a $4,500,000 building program is now under way.

New York State's Department of Public Works draws detail plans and lets all contracts for construction of the parkways in cooperation with the Long Island State Park Commission, which draws the development plans, approves details of design and construction, and maintains the finished parkways. Robert Moses is president of the commission; Arthur E. Howland and Sidney M. Shapiro are respectively chief engineer and deputy chief engineer. Bertram D. Tallamy is superintendent of the Department of Public Works and Joseph J. Darcy is district engineer.

Treatment, Equipment, and

Selecting Equipment for Sewage Treatment

EXPERIENCE with tried, well-known mechanical equipment varies from highly workable to unsatisfactory, depending upon characteristics of sewage and material removed. Some experiences with sewage-treatment equipment are:

• **Trash Racks:** Operation of mechanically cleaned racks is frequently a source of difficulty and results in costly maintenance. One successful New York City design consists of teeth that enter rack bars against sewage flow at the bottom, and move upward with teeth protruding between the bars. Screenings are carried along bars, over the top and fall off the ends of bars as teeth disengage.

Actuation of controls by differential head on the rack is a practical method of relating cleaning to clogging.

• **Screenings Grinders:** Automatic feeding of coarse screenings to grinders causes occasional operating difficulties. Discharge of screenings to a sorting table—where metallic and bulky materials can be removed before grinding—appears to be desirable practice. Screenings can then be fed to grinders at effective capacity rates.

Grinding operations at large multiple installations are readily controlled when a grinder is located at each rack. Initial cost of individual grinders is higher than a conveyor belt collecting from several racks and discharging to a single grinder. Operations are, however, under better control and more satisfactory in the long run.

• **Grit Chambers:** Subject to a high rate of wear, grit-channel equipment should be rugged, durable and readily replaceable.

Renewable wearing shoes are indispensable on attachments that support chains, flights, scrapers, buckets, stirrers and other moving parts. Rails subject to wear should be readily replaceable.

Inclined screw conveyors for grit removal at the District of Columbia's Blue Plains plant were originally supplied with thrust bearings near the bottom of grit hoppers. Because of continual submergence in grit, these bearings lasted only a short time. This difficulty was overcome by replacing bottom units with ball-thrust bearings above sewage level. The new design eliminates frequent failure, also results in much smoother operation.

For transporting grit from multiple channels to washing, storage and disposal facilities, belt conveyors appear to operate with lower maintenance costs than either scraper or spiral conveyors.

Continuous operation during storm flows and intermittent use during periods of low-rate grit accumulation are recommended.

Hoppers and a clamshell bucket (ENR April 28, 1949, p. 56) and water-jets are being utilized for grit removal. These methods may be advantageous in eliminating wear on collecting mechanisms and in producing clean grit.

• **Sludge-Collecting Equipment:** The sludge-collecting equipment for rectangular sedimentation tanks must be specified in detail to assure satisfactory operation and long life.

Multiple sludge hoppers at inlet ends of rectangular tanks should be eliminated insofar as possible. This may be done in relatively narrow tanks by cross-collectors. Chain and flight collectors are normally used but spiral conveyors are adaptable to this service.

"Hunting tooth" or "extended life" sprockets for chain drives—designed to double number of teeth on sprocket and to reduce wear on each tooth by 50 percent—have been widely publicized recently. It is desirable to specify that sprockets be of alloy cast iron with 1.0-1.25 percent nickel and 0.45-0.65 percent chromium and chilled to give a hardened surface.

Durable chains carrying scrapers should be connected with hardened-steel pins instead of soft copper-bearing rivet steel often employed. This will reduce chain elongation as well as chain and sprocket wear.

Size and unit weight of chain should be specified for particular project. If this is not done, manufacturers' proposals may not be comparable.

For support of return flights, experience seems to indicate that structural steel should not be less than ¼ in. thick. Minimum bolt diameter should be ⅝ in.

Another design feature to improve operation of sludge collectors is inclusion of readily removable wearing shoes inserted in holders and bolted to flights at points of contact with rails in tank bottom and of supporting angles on return flight.

Some manufacturers recommend adjustable releases to disengage the collector mechanically from motor when collector is overloaded. These devices generally are substitutes for shear pins.

The Chicago Sanitary District is well satisfied with individual motorized reducers on sludge collectors in which all parts except flights are designed to withstand maximum torque of motors.

Special attention should be given to possibility of shaft deflection and consequent effect in bearing mountings. Self-aligning bearings are desirable.

• **Circular Sedimentation Tanks:** The sludge-removal equipment for the Chicago Sanitary District's circular settling tanks is designed to withstand maximum torque of motors. Shear pins are not permitted.

Circular-tank equipment in some instances has corroded so seriously—due to electrolytic action or other reasons—that anticipated life cannot be realized. This may be combatted by a suitable schedule of inspection, painting and other maintenance and repair work.

Additional weir capacity may be advantageous for circular tanks. This may be provided by installing a trough within the tank supported from the outside wall.

• **Trickling Filter Distributors:** Little difference in performance has been reported between fixed distributors with rain-like spray and conventional rotating units (W. Q. Kehr and C. C. Ruchhoft, Report of Department of Public Health and Welfare and U. S. Public Health Service.)

When rotary distributors are driven by electric motors, cost of operation, maintenance and repair will exceed that of conventional reaction-driven units. Electric drives are seldom justified.

Distributor arms for rotating units

Stream Pollution

Editor's Note: How to pick the proper equipment; how to handle tannery wastes; how to make proper analysis of stream pollution; how air diffusers were selected economically—these are problems that face sewage works engineers every working day. Practical solutions are here, included in abstracts of four of the papers delivered before the recent convention of the Federation of Sewage Works Associations. Authorities are: Frank L. Flood; J. E. McKee; C. J. Velz; and N. E. Anderson.

should be made of genuine wrought iron and supported by rods with ½-in. minimum diameter.

Operation under a wide range of flow is made possible by four arm distributors, two arms being equipped with weir boxes of siphonic overflows.

• **Vacuum Filters:** Corrosion of vacuum-filter equipment used for dewatering ferric-chloride-conditioned sludge is a source of considerable trouble and expense. Where operation is continuous, corrosion shows up within a few months.

To reduce corrosion, it appears advisable to specify stainless-steel screens, staples and division strips.

Pipes and fittings between drum compartments and trunnion conduits should offer more resistance to corrosion. Stainless-steel fittings and heavy-wall chemical-rubber hose may provide a reasonable basis of design for these parts. Rubber hoses should be supported to prevent moisture traps and movement when drum is revolving.

One new vacuum filter is equipped with all vacuum-piping connections outside the drum. This facilitates removal and repair.

• **Sludge Driers and Incinerators:** When multiple-hearth and flash-drier units are to be purchased, careful attention should be given to design and selection of materials to give reasonable life under expected temperature, operating and service conditions. Provision should also be made for renewal and replacement with reasonable facility of parts subject to wear and breakdown. — Frank L. Flood, partner, Metcalf & Eddy, consulting engineers, Boston, Mass.

Tannery Waste-Problems

Type and degree of treatment for tannery wastes depend primarily on requirement of the receiving watercourse. Some of the problems that are met in the tannery-waste projects are:

• **Clogging of screens, pumps and pipes:** Beam-house wastes contain variable quantities of fleshings, hides, shavings and hair that not only clog treatment facilities but also—when combined with calcium-carbonate deposits—are difficult to dislodge and remove.

Most effective remedy is to reclaim as much of these materials as possible before they reach the drains.

To reclaim beam-houses wastes, bar screens with ¾ or ½-in. openings equipped with mechanical-cleaning devices are needed. Screened material salvaged, incinerated, or buried.

• **High Alkalinity and Hardness:** Hides are soaked in lime solution and a depilatory agent such as sodium sulphide. Vats of these solutions are emptied intermittently; the effluent contains a high concentration of dissolved and undissolved lime, sulfide and depilatory-action breakdown products.

The calcium tends to combine with normal carbonates formed by reaction of caustic alkalinity with carbon dioxide dissolved from the air or products of decomposition to precipitate calcium carbonate. Part of this precipitate can be removed by flocculation and sedimentation.

The biochemical oxygen demand generally would govern method of handling wastes at low dilutions. If biological treatment is indicated, much of the calcium would be precipitated in the process.

High pH of beam-house wastes or combined with tan liquors will usually preclude biological treatment. The exception is when hydroxide is first neutralized by addition of acid or flue gas.

• **Sulfide and Evolution of Hydrogen-Sulfide Gas:** Sulfides are seldom troublesome at the high pH of tannery effluents. With settling tanks to remove excess lime and settlable solids, most of the sulfides will be precipitated as calcium sulfide. One plant reports a removal of more than 96 percent sulfide by sedimentation and equalization.

When unsettled tannery wastes are discharged to a stream or sewer, the pH may be lowered so that hydrogen-sulfide gas is released. If acid or flue gas is used to prevent calcium-carbonate deposition, care must be exercised to guard against offensive evolution of hydrogen sulfide.

Most of the heavy sludge and sulfides should be removed by sedimentation before pH adjustment.

• **De-oxygenation of Receiving Waters:** Mixed beam- and scrub-(bleech) house waste may contain 500 to 2,000 ppm. of 5-day, 20 deg. BOD; spent vegetable tan liquors may have 10,000 to 45,000 ppm. BOD. Combined beam- and scrub-house and tan-yard wastes are expected to have 1,000 to 3,500 ppm. BOD, much greater than that of municipal sewage.

When these wastes are diluted in a receiving stream, they decompose biochemically and provide a nutrient diet for sapropylitic bacteria. Consequently, combined wastes in sufficient concentration may be expected to exercise a rapid de-oxygenating effect upon receiving waters.

It is fortunate that these properties also make these wastes amenable to biological treatment, BOD removals being from 75 to 90 percent, or higher.

When diluting water is not sufficient to prevent excessive de-oxygenation by tannery wastes, the remedy may be found in the following processes or combinations of them. Flocculation and sedimentation; chemical precipitation; biological treatment on trickling filters; secondary sedimentation; intermittent sand filtration; equalization of discharge over a 24-hr. period; segregation and evaporation of strong wastes (tan liquors); and lagooning during periods of critical low stream flow and released when dilution is adequate.

• **Dewatering Tannery Sludge:** Primary sedimentation of tannery wastes produces a voluminous flocculent sludge that is difficult to dispose of. Volume of sludge from such wastes will be about ten percent of the total waste; its solids content will be about 2 to 5 percent.

The sludge contains a high percentage of fine suspended solids. These solids with precipitated calcium carbonate tend to clog filter interstices.

Its pH is usually in excess of 11.5 and its methyl-orange alkalinity about

20,000 ppm. or higher. The sludge, therefore, does not digest readily by biochemical processes without adjustment of pH.

Lagooning of tannery-waste sludges is practical and economical where land is available. Underdrained drying beds are preferable to simple lagoons because upper-layer pores seal quickly.

Dewatering is primarily by evaporation; considerable coagulation and sedimentation results from long lagooning periods.

When lagooning cannot be practiced, sludge may be dewatered on vacuum filters or centrifuges. Centrifuges remove coarse heavy material in sludge, but lighter solids must be returned to a settling tank for further flocculation and sedimentation.

Vacuum filtration of unconditioned sludge is almost impossible because a thin coating of fine organics and calcium-carbonate granules plugs filter cloth quickly.

Vacuum filtration is, however, practical for dewatering sludge in limited areas with proper conditioning or use of filter aids. A coarse, readily filterable flocculent material is produced when the sludge is acidified to a pH of between 4 and 5. If sulfides are used in liming vats, the hydrogen sulfide must be released before filtering.

Addition of filter aids has been found helpful. A buffer dust or fine shavings—normal products in light leather tanneries—may be used. If necessary, sawdust may be added. But addition of too much filter aid increases amount of filter cake to be disposed of.—JACK E. McKEE, Camp, Dresser and McKee, Consulting Engineers, Boston.

Careful Sampling For Pollution Check

ANALYSIS OF STREAM POLLUTION depends on three operations: Collection of data; analysis of data to determine specific self-purification characteristics, and projection of estimates for other conditions. Projection of estimates serves mainly for evaluation of expected conditions at varying drought severities and ranges of pollution load.

By analysis of a good set of data defining one stable condition, natural purification characteristics can be defined so that stream quality can be computed for other drought and load conditions in less time and with less effort and funds than by additional stream sampling.

• **How collection is divided.** Scientific collection of data for stream analysis is divided into three operations: Hydrologic factors, sources of pollution and water-course sampling.

Characteristics of the daily hydrograph can be ascertained at different locations from stream flows records. Determination of drought probabilities to delineate pattern of critical runoff is an importance.

Factors influencing de-oxygenation, bacterial death rates, and re-aeration are related critically to varying physical characteristics of the river channel from reach to reach. These are best found from cross-section soundings.

Soundings at 500 ft. intervals are ideal but quarter-mile spacings are usually satisfactory through critical reaches. Half-mile intervals will be adequate in less critical zones.

Many soundings along the stream are preferable to a few; they need not be precisely located. Cross sections may be taken by soundings measured from surface of the water and from points on a rope stretched across the channel. Location of cross sections can be approximated from physical features identified in the field and marked on a river-strip map.

The time at which sectioning stations are occupied should be noted. This permits surface of water to be referred to a gage-height corresponding to the prevailing river discharge. Also, soundings can be adjusted to other flow conditions by use of rating curves at nearby gaging stations.

Additional soundings should be made along the channel (in moving by boat between stations) to detect unusual pools or deep pockets. Longitudinal and transverse soundings are the only reliable method for locating areas of possible sludge deposits.

Absence of sludge deposits during sounding should not be taken to indicate that they will not develop. During droughts water velocities may be sufficiently reduced to permit deposition and accumulation of sludge. But during high-runoff periods, deposits may be scoured by high flows and not be detectable.

Main purpose of cross sections is to determine occupied channel volume under a particular steady stream flow. From this, the displacement time and then the all-important time of passage of pollution from reach to reach may be computed. Pollution load satisfied or bacterial survivals are then measured by integrating various loads within this time of passage.

Other uses of the cross sections are: Computation of mean channel depths and variation in mean velocity through various reaches. Mean depths are important in computing re-aeration and mean velocities and make possible an evaluation of potentialities of sludge accumulation and scour.

• **Uncovering sources:** Sources of pollution are located from an onshore survey. Municipal pollution is determined from tributary population but industrial-waste load must be determined from a waste survey of the major industries.

In measuring biochemical oxygen demand of wastes, checks should be made for immediate demand and for a differentiation between fraction of BOD in suspended-solids form subject to deposit and that fraction in colloidal or dissolved state remaining in the flowing stream. Standard 5-day BOD as well as rate curves extending to 20 days should be run for major industries suspected of contributing unusual wastes.

Attempts are sometimes made to bypass the onshore survey by determining pollution load from BOD of receiving waters. It should be obvious that BOD results of river water cannot be utilized both to determine and check the load.

Other objections to this procedure are: Varying runoff patterns in the water course set up substantial variations in population equivalents through volume changes; and it is difficult to get representative water samples below a pollution source (a small error in BOD connected with high runoff results in a large error in population equivalent). Pollution load can be measured with greater reliability from an onshore survey.

• **Fresh water sampling.** Fresh water samples usually required are for: BOD, dissolved oxygen, pH, temperature, and if bacterial quality is under consideration, coliform concentration. Where fish life is important, chemical and biological assays provide auxiliary data. They are not substitutes, however, for the DO test when organics are involved. Oxygen depletion is a more sensitive criterion than toxicity concentrations.

The first question to be answered in setting up a program is: How many samples should be obtained. "This question cannot be answered statistically without foreknowledge of the variability of the phenomena to be sampled and accuracy desired."

Previous surveys are a source of information as to the nature of variability. They serve as a guide for starting a sampling program, which should be kept flexible to meet uncontrollable variations at play.

Too many stations are generally set up and too few samples are ordinarily collected at one time. "Fewer stations with a sufficient number of samples

to define results in statistically significant terms are much more reliable than many stations with only a few samples at each. If valid conclusions are to be drawn from data, enough samples must be taken to define variability of statistics and determine degree of confidence in the mean."

The same reasoning holds true for intensity of sampling. Sampling—too frequently—is spread over a long interval during which river conditions vary widely. "Attempting to sample all conditions by grabbing here and there, now and then, usually defines no condition and may be very misleading. Averaging of such non-comparable results is dangerous. It is much better practice to concentrate during a short interval with intensive sampling when the river regime is stable during a steady hydrograph."

• **Many factors in stream sampling:** Most important factor affecting sampling is the daily hydrograph. Ideal period for sampling is during a steady runoff pattern. But sampling should not start until a stable river regime has been established under a steady hydrograph. Then a week of intensive sampling is usually sufficient to provide 16 to 20 samples per station.

Location of stations in relation to pollution sources also affects stream-sampling results. If the station is at or near a pollution source, sampling results will probably be erratic. If the station is some distance downstream, dispersion of pollution throughout the section will be reasonably complete.

If the stream is wide and sluggish, it should be tested for variability. If this is found, sampling at a number of points across the section are needed.

Sampling stations should not be located immediately below a tributary junction. They should be on the main stream and tributary above the confluence. If this is not possible, the station should be on the main stream sufficiently downstream to insure complete mixing of the waters.

Hydro plants, operating with considerable variation throughout a 24-hr. period, set up a diurnal variation in runoff. This produces pulsations in discharge that persist along the stream and make effective sampling difficult. The solution is establishment of stations occupied 24 hours a day to take samples one or two hours apart. This will pick up radical cyclical variations.

Fluctuation in sampling determinations frequently results from the operating pattern of large industries. Some industries operate seven days a week, 24 hours a day, on a relatively continuous-discharge basis with daily and day-to-day minor variations. Other firms shut down over the weekend and holidays. Some operate on an eight-hour basis and may discharge waste in batches.

During shutdowns, industrial load can be evaluated. If sludge deposits are involved, carry-over from past accumulations is a major consideration.

• **Natural purification may be abnormal:** Abnormalities in natural purification characteristics affect location and number of samples to be collected. If such situations are suspected, a few test runs should be made to determine general conditions before setting sampling stations.

Four abnormalities are: Immediate demand, sludge deposits, biological absorption on the stream floor and algae.

A pollution load in the form of immediate demand may severely affect the dissolved-oxygen profile. A waste survey, made prior to sampling, will detect immediate demands. Stations are then located to reflect the abnormality.

Sludge deposits may produce abnormalities similar to immediate demand. These arise from pools in the channel that allow suspended solids to deposit and accumulate. If the deposit is in equilibrium (no scouring), a sudden drop in the DO profile may be found.

"It is probable that such pockets with sharp DO drops are never detected in many river surveys and abnormalities at the lower end of the DO profile remain a mystery." Pockets in the river bed must be found by cross sectioning and their effect must be gaged by properly placed stations.

An unusual shallow-water phenomenon is biological adsorption on the stream bed. Bed growths extract and accumulate BOD from the water, an action similar to that in a trickling filter. Perhaps as much as 60-80 percent of the BOD may be extracted from overflowing water, building up an equilibrium storage in zoogleal growths so that accumulated demand is equal to daily load extracted. This produces a very sharp drop in the DO profile far in excess of that accounted for by passage through the reach.

High demand from accumulated storage should not be confused with a high rate of biochemical oxidation of organic matter, generally normal for aerobic decomposition. Excessive demand results from the normal rate working on an accumulation in excess of one day's load.

Biological adsorption usually does not occur where depths are more than three or four feet. This abnormality may not be detected as it is affected by scour. Flash floods may scour stream beds completely; a period following such scour is necessary to re-establish biological growths and accumulte a BOD equilibrium storage.

If biological growths die and dislodge in large quantities, they will impart a pollution load that must be satisfied in the lower reaches.

• **Algae affects sampling:** Algae give off oxygen during the day while at night they do not and may even utilize oxygen. When marked differences are apparent, it is essential that sampling must be once every hour or two hours on a 24-hr. cycle.

Algae variations are most pronounced on sunny days. Cloudy weather usually results in normal conditions. If a stream is flushed by a freshet and a steady river regime can be established quickly, uninfluenced samples may be obtained before heavy growths are re-established.

In deep rivers, the algae effect is usually only at the surface. Mid-depth samples may produce more representative results.—C. J. VELEZ, chairman, department of public health statistics, University of Michigan, Ann Arbor.

Economic Basis For Air Diffusers

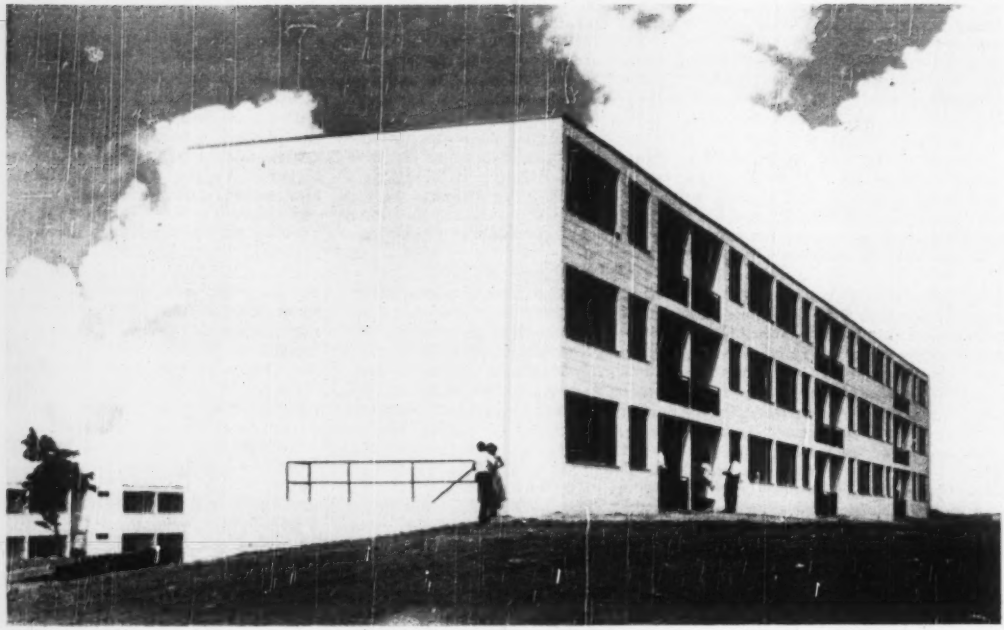
AIR DIFFUSERS for the West-Southwest Sewage Treatment Works (The Sanitary District of Chicago) were selected as a result of economic studies based on test results to determine lowest total annual cost. Design points are:

1. An entirely new air filtering system was adopted. It consists of bag filters and loose asbestos-fiber lining for primary filtering. Automatic electronic units are employed for secondary filtering. This installation is expected to reduce the unusually dirty raw air content of about 9.0 milligram to less than 0.5 mg. per 1,000 cu.ft.

2. Diffusers are 80-permeability porous plates (80 cfm. of air per minute per sq.ft. of 2 in. of water head. Plates are dry and air is at 70 deg. F.) except tanks 1 and 8 which are equipped with 120-permeability plates. This will demonstrate merit of 80's and check the promising 120's.

3. Diffuser plates are cemented into six-plate precast-concrete holders. This was done because computed long life with clean air and high permeability plates indicated an annual cost on a replacement basis less than that for removal of mountings and cleaning.

4. Plate holders are perpendicular to tank walls and connected to 4-in. headers, about 34 ft. long, by 2-in. right- and left-hand, stainless-steel nipples. Each header is supplied by a six-in. riser at center.—N. E. ANDERSON, engineer of treatment-plant design, The Sanitary District of Chicago.



New Apartments for Oak Ridge Workers

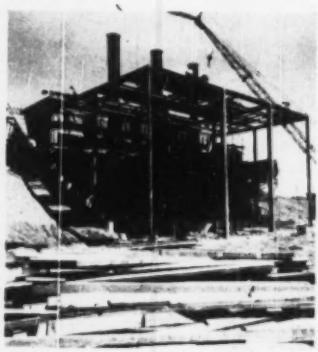
ERECTION OF FORMWORK for concrete floors of garden-type apartments at Oak Ridge, Tenn., was simplified and speeded by elimination of shoring. Instead of being supported on timber posts extending to the floor below, as is usually the case in the construction of an all-concrete building, the metal-pan forms were carried on adjustable-length, open-web steel joists.

This project is being constructed for the Atomic Energy Commission as part of a broad plan to house employees of the atom plants (ENR Aug. 18, p. 48). Located on the south side of Oak Ridge Turnpike, west of Gamble Valley Road, it consists of 29 apartment buildings containing 24 one-bedroom apartments and 429 two-bedroom apartments. In addition, there is being built a central heating plant having three steam boilers with automatic stokers and pneumatic ash-handling system.

Three types of buildings varying in plan, size and appearance are used in this project. All are designed so that the length of each building is dependent upon the number of typical apartment units its particular site will accommodate. The longest building is 378 ft., shortest is 151 ft.; widths are 31 ft., 39 ft. and 49 ft.; one type is three stories high and the other two are two stories high, all types having partial basements.

Beam and joist floors

The structural frames are of reinforced concrete, with column spacing varying from 12 to 17 ft. Floors are of concrete beam and joist construction and will be finished with asphalt tile. The joists are 4 in. wide, spaced on 24-in. centers and cast on steel pans, leaving a slab 2½ in. thick between joists.



CENTRAL HEATING PLANT now being built will serve new apartments.

The roofs are supported on open-web steel joists, spaced on 2 ft. c. to c. Spans vary from 12 to 17 ft. between L-shaped, concrete spandrel beams and inverted T-shaped concrete intermediate beams.

Roof cast on gypsum board

After the steel roof joists were erected, braced and anchored, ½-in. gypsum board was placed on the top flanges to serve as a bottom form for a 2½-in. thick cast-in-place gypsum roof. Asphalt and slag roofing was applied later.

Flashing and gravel stops are made of aluminum.

Exterior walls consist of 8-in. lightweight concrete block, extending 8 ft. 2 in. from the floor level to the underside of the 12½-in. deep concrete spandrel beams. Horizontal joints have a ¾-in. V-groove, while the vertical joints are struck flush, to give the ap-

pearance of siding after the masonry is painted.

Except for six buildings that have wood-frame partitions, the interior partitions are of gypsum block. Plaster was applied directly to the gypsum block, but the exterior walls were furred before the ⅜-in. foil-backed gypsum lath and the plaster were placed. To expedite construction, lath was applied to the entire area of the ceiling before the interior partitions were built.

With the exception of the wood windows on the terrace side of the living rooms, aluminum sash was used throughout. There are four types of aluminum sash: double hung, awning-type, folding-type and projected type windows.

For heating the apartments, steam from the central heating plant is piped to hot-water converters located in the basements, then circulated through the hot-water systems. The radiators are finned, steel-tube baseboard convectors with steel plate covers which are continuous along one entire side of each room.

Erection procedure

Basements were excavated with 12-cu. yd. tractor-drawn scrapers. The excavations for spread footings under columns were dug with air-operated clay spades.

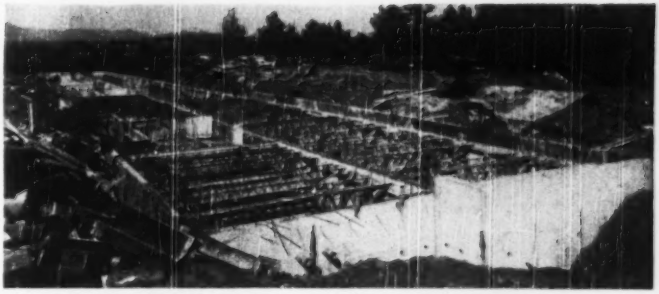
While excavation proceeded, two sawmills were set up to fabricate footing and wall forms. Two and one-half sets of forms were made up for each of the three areas into which the project was divided for administrative purposes. Forms for the foundation work, grade beams and columns were made of plywood.

Mixed-in-transit concrete was placed directly from a 1-cu. yd. bucket raised by a track-laying crane operating on the ground.

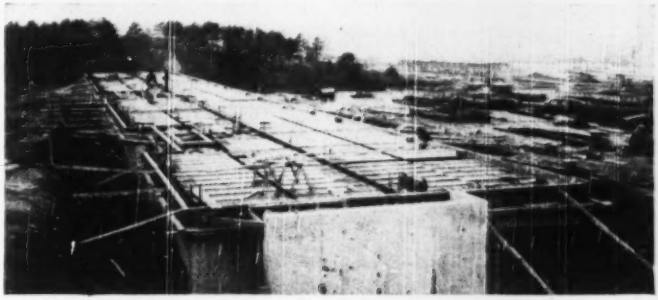
After the inside wall forms were stripped, 4 x 4-in. posts were set on each of the wall footings and extended to the underside of a 4 x 4-in. cap, which carried the ends of adjustable-length, open-web steel joists. These joists supported the solid decking on which the metal-pan floor forms rested.

The upper floors were constructed in a similar manner. Shoring was necessary only for the spandrel and intermediate beams.

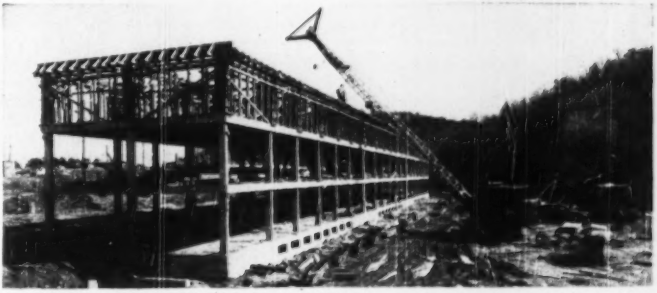
The apartment buildings were designed by Skidmore, Owings and Merrill, Architects-Engineers. Merritt-Chapman and Scott Corp. of New York City was the general contractor, with W. P. Mitchell in charge of construction. V. J. Kelley of this organization submitted the data on which this article is based.



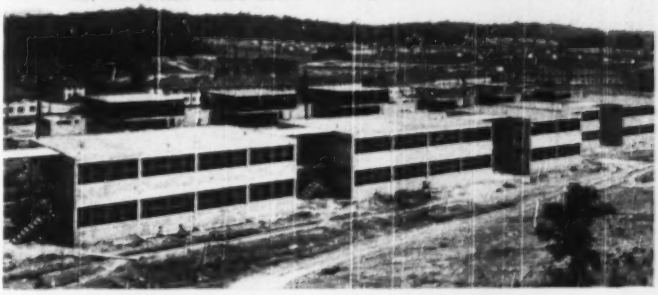
1 OPEN-WEB STEEL JOISTS of adjustable length carried on temporary timbers served as falsework in constructing the apartments. They supported . . .



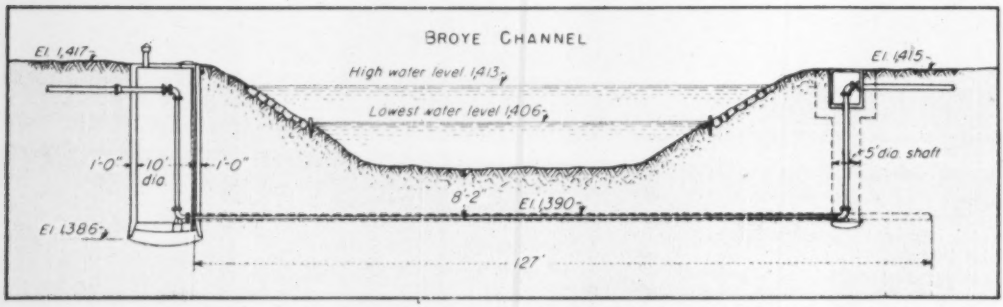
2 METAL-PAN FORMS for the beam-and-joist floors. Concrete for the 2½-in. slab and the entire structural frame was then placed by a . . .



3 LONG-BOOM CRANE, of the track-laying type, whose bucket was fed by mixer trucks. Steel roof joists will carry a gypsum roof.



4 CONCRETE BLOCK WALLS enclose the new buildings, which are two or three stories high. All feature large windows.



As a method which would not hinder navigation, Swiss engineers chose to . . .

Jack Pipeline Under River Bed

To PASS a 5-in. pipeline beneath Broye Channel (between Lake Neucharel and Lake Geneva) without hindering navigation, Swiss engineers adopted a horizontal well-drilling method and jacked the pipe through the streambed.

The method, patented in Switzerland by Hans Fehlmann, was devised for placement of perforated screen casing in water-bearing strata to tap groundwater.

In this pipeline laying application of the method, a 6½-in. casing was jacked 127 ft. from a 10-ft. dia. shaft on one shore to a 5-ft. dia. shaft opposite. The 5-in. dia. steel pipeline was inserted in the outer casing in 4-ft. 11-in. lengths, welded together as they were added. Then the outer casing was withdrawn. Lateral deviation of the drill was less than an inch in both horizontal and vertical planes.

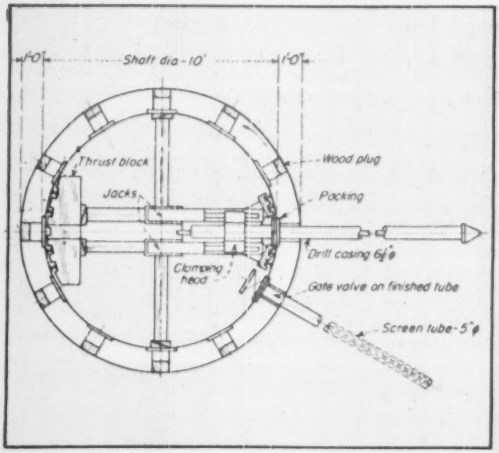
Had this method not been used, a 9-ft. deep trench would have had to be excavated in the river bottom between rows of sheetpiling—totally disrupting river traffic.

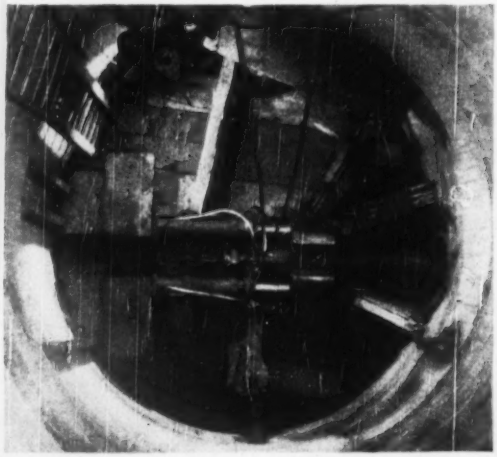
As water collector

Used conventionally, the drilling procedure is applied to placement of horizontal water collectors — screen-casings radiating out from a concrete-lined shaft sunk to a groundwater source. Essentially, the difference between Fehlmann's method and the U. S.-patented Ranney method for doing the same job is this: Fehlmann sinks solid well pipe sections, inserts a screen-casing, then extracts the solid outer pipe. Ranney uses a heavy perforated steel pipe which stays right in place as the finished well. (For applications of the Ranney method see ENR, Oct. 22, 1936, vol. p. 576, Jan. 6, 1938, July 31, 1941, Vol. p. 155 and April 20, 1944, Vol. p. 556.)

Both methods make use of hydraulic jacks for pushing the sections of pipe out through port holes in a watertight, circular shaft. Both use cast iron points, perforated with holes into which fine sands wash—to be carried back into the work shaft and pumped away.

In a groundwater installation completed recently for Berne, Switzerland, four Fehlmann collector-shafts were constructed to tap an area that would have required 15 vertical filter wells. Total length of screen-pipe installed in the four shafts is 1,525 ft., and by dropping the water table about 10 ft., the installation can produce near 16,000 gpm.





PRECAST CONCRETE SHAFT with plugged portholes in its lowest section is sunk to desired level. Jacks, shown in both drawing and photo, push drill heads through portholes. Screen tube or pipeline, is inserted, then outer pipe sections are withdrawn.

How To Blend Aggregates To Meet Specifications

George F. Driscoll
Assistant Professor,
Department of Civil Engineering
University of Notre Dame
Notre Dame, Ind.

TRIAL-AND-ERROR GUESSWORK can be avoided in proportioning two or more poorly graded aggregates to get a blend that meets specifications. Project engineers, asphalt plant inspectors and aggregate plant operators—so frequently confronted with the problem—can solve it quickly and precisely on paper, without physically mixing the available aggregates.

Sizes and gradation of sizes of aggregates are specified by percentages passing standard sieves with graded screen openings. A typical specification might require that:

95–100 percent pass a 1-in. sieve
40–55 percent pass a #4 sieve
20–30 percent pass a #40 sieve
5–10 percent pass a #200 sieve

It is apparent that tolerances specified make allowable: A relatively coarse gradation, for which the minimum allowable percentages pass the sieves; a much finer aggregate, for which the maximum allowable percentages pass the sieves; and countless combinations falling between these two permissible extremes.

Methods herein outlined determine graphically and mathematically what proportions of available aggregates must be mixed to produce a material within the given gradation limits. Many proportions will satisfy; these solutions yield the limits within which all satisfactory proportions will fall. Time required in solving any proportioning problem is not much more then that required to make one trial of the trial-and-error method. These methods will also indicate when it is impossible to blend two non-specification aggregates, to within specification limits.

Blending two aggregates

By graphics:

Assume two non-specification aggregates, A and B, with the following grain size characteristics:

Sieve Size	% A Passing	% B Passing
1-in.	100	90
#4	69	31
#40	39	13
#200	17	1

Aggregate A, the finer, is too fine; Aggregate B is too course to meet specifications.

On ordinary cross-section paper (See Fig. 1), lay off along the left-hand margin gradation percentages for aggregate A: (—#200, 17 percent; —#40, 39 percent; —#4, 69 percent; —1 in., 100 percent). Locate the right-hand margin 100 spaces (100 percent) from the left and plot gradation percentages for B on it. Then draw a line connecting percentages of A and B that pass the #200 sieve. Note that the ordinate of any point along this line will represent the percentage of aggregate smaller than the #200 mesh in a blend whose proportion of B is represented by the abscissa measured from the left-hand margin. For example, if 20 percent of B (and 80 percent of A) is used, the amount of — #200 material in the blend will be 14 percent.

In like manner, draw lines connecting points on the A and B scales for percentages passing the #40, #4, and 1-in. sieves.

Assuming specifications allow from 5 to 10 percent of the —#200 material, draw first a horizontal line at 5 percent on the vertical scale, then another at 10 percent. These cut the —#200 line at points indicating the limiting proportions that may be blended. If a blend of 75 percent B (25 percent A) is used, 5 percent will pass the #200 sieve; if a blend of 44 percent B (56 percent A) is used, 10 percent will pass it. Thus, as far as the requirements of the #200 sieve sizes are concerned, any blend with from 44 to 75 percent aggregate B will satisfy.

In a similar manner, the extreme proportions of B for each sieve size can be determined. Then, any vertical line which lies within the limits thus marked on all four inclined lines will represent a permissible blend. Referring to Fig. 1, the largest minimum proportion of B is 44 percent (on the —#200), and the smallest maximum proportion of B is 51 percent (on the —1-in.). Therefore, any proportion of B between 44 and 51 percent will be permissible to form a blend that meets specifications.

With graph paper and a straight edge, the above problem—and any of its type—can be worked in less than five minutes.

If two aggregates are studied that cannot be combined in any proportion to fall within the specified limits, the graphical solution may appear as in Fig. 2. No vertical lines can possibly be drawn which will lie within the limits marked on all four size lines. If conditions necessitate use of these two aggregates, a study of this chart (Fig. 2) will show proportions of the two aggregates that most nearly approach a specification blend.

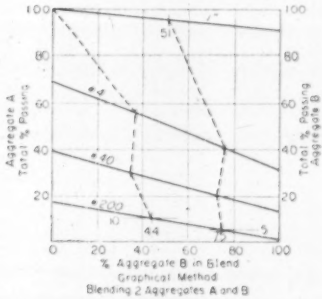


FIG. 1. GRAPHICAL SOLUTION for proportioning two non-specification aggregates to meet specifications gives this answer: Proportion of aggregate B in the blend can vary between 44 and 51 percent.

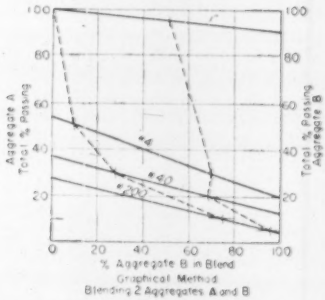


FIG. 2. THIS SOLUTION illustrates condition wherein no specification blend is possible with aggregates A and B. No vertical line can be drawn to fall between limits set on all four sizes.

By mathematics:

Analytical proportioning of two aggregates is as quick and simple as the graphical method.

Using the aggregates and specifications defined above, consider the —#200 size. On the coarse side of the required blend, 5 percent is specified as the fine limit, 10 percent is permissible.

Hence, for #200 coarse:

$$B_c \times 1 + (1 - B_c)\,17 = 5$$
$$B_c = 75 \text{ percent}$$

and for #200 fine:

$$B_f \times 1 + (1 - B_f)\,17 = 10$$
$$B_f = 43.7 \text{ percent}$$

where B_c is the proportion of aggregate B in the coarsest allowable blend and B_f is the proportion of B in the finest blend allowed.

Similarly, assuming specifications permit 20-30 percent to pass the #40 sieve, for #40 coarse:

$$B_c \times 13 + (1 - B_c)\,39 = 20$$
$$B_c = 73.1 \text{ percent}$$

and for #40 fine:

$$B_f \times 13 + (1 - B_f)\,39 = 30$$
$$B_f = 34.6 \text{ percent}$$

In like manner, the limiting proportions of —#4 and —1-in. material can be determined. Then, between the highest lower limit and the lowest higher limit fall the proportions of B which when mixed with A will result in an acceptable blend. If specifications require that 40-55 percent of the blend pass the #4 sieve and 95-100 percent pass the 1-in. sieve, completion of the computation begun above proves that permissible limits of B in the blend vary from 43.7 percent (from the finest blend, —#200) to 50 percent (from the coarsest blend, —1 in).

These results check the 44 and 51 percent limits found graphically.

For each sieve size, two equations can be set up—

$$\text{Coarse } B_c = \frac{a - x}{a - b}$$

$$\text{Fine } B_f = \frac{a - y}{a - b}$$

a = percent passing sieve in aggregate A (the finer aggregate)
b = percent passing sieve in aggregate B (the coarser aggregate)
x = minimum required percent passing sieve
y = maximum required percent passing sieve

From a study of the results obtained by solving the above two equations on each sieve, limits within which are permissible blends can be determined. These limits will be the highest of the low values on each sieve and the lowest of the high values on each sieve. This study will also reveal the impossibility of obtaining the required blend, if such is the case.

Blending three aggregates

In blending three aggregates, as with two, the proportions which will give the coarse limits and the fine limits must be found; then any intermediate proportion desirable can be used.

The first step involves tabulating specification values as in Table I. Three aggregates, A, B and C, are available to make the specified blend which will lie between the gradings shown in the specification columns. This form of table gives the percentage between sieve sizes instead of the total percentages passing each sieve. Note that all columns total 100 percent.

TABLE I

	Specification		Available Aggregates		
	Coarse	Fine	A	B	C
Larger than 1"	5%	0%	10%	0%	0%
1" to #4	55	45	69	0	0
#4 to #40	20	25	16	42	0
#40 to #200	15	20	3	55	15
Pass #200	5	10	2	3	85

It is further necessary to divide the aggregates in three-size separates so the total of the three is 100 percent. Note that the example in Table I has 5 separates. These are divided into two groups of three separates as shown by Table II.

TABLE II

	Specifications		Available Aggregates		
	Coarse	Fine	A	B	C
Group 1					
Above #4	60	45	79	0	0
#4 #40	20	25	16	42	0
—#40	20	30	5	58	100
Group 2					
Above #40	80	70	95	42	0
#40 #200	15	20	3	55	15
—#200	5	10	2	3	85

By graphics:

With aggregates and specifications so tabulated consider the percentages of aggregates A, B and C necessary to make the fine specification grading, Group 2. Use a sheet of triangular coordinate paper as in Fig. 3. This method is based upon the fact that the sum of the distances of any point within an equilateral triangle from the three sides is constant and equals the length of one side.

Each of the three separates is measured from one of the sides as a base, being zero percent at the base and increasing to 100 percent at the opposite vertex.

Point M represents the grading of the fine limits of Group 2 (70 percent of +#40, 20 percent of #40 —#200, and 10 percent of —#200). The gradings represented by the three aggregates can also be represented by points A, B and C. Any combination of A and B can be represented by a point on a line joining A and B. Line A C and Line B C also represent all mixtures of A and C, and B and C, respectively. Further, the grading represented by any point within the triangle ABC can be obtained by the proper proportions of aggregates A, B and C. If any point falls outside the triangle ABC, these three aggregates cannot be blended to make the grading represented by this point.

Draw the line AB. Draw CM and extend it to the intersection with AB at R. Aggregates A and B can be proportioned to make the grading represented by point R; the proportion of A being represented by the ratio RB/AB, and the proportion of B represented by the ratio AR/AB. A mixture of the R combination of A-B and aggregate C can be made to equal the grading represented by M; the necessary proportion of C equaling the ratio RM/RC. This latter ratio will give the required percentage of C. The percentage of A can be found by multiplying RB/AB by MC/RC; the percentage of B equals AR/AB multiplied by MC/RC. As a check, note that these three percentages total 100 percent: A, 60.2 percent; B, 30.5 percent; C, 9.3 percent.

Again refer to Fig. 3. Point N, representing the grading of the coarse limits of Group 2, has been established. Any point on the line MN represents a grading which will be satisfactory. If the percentages of A, B and C which combine to make the grading represented by point N are found, these will represent the coarse permissible limits: A, 74.3 percent; B, 22.2 percent; C, 3.5.

Combining this information with

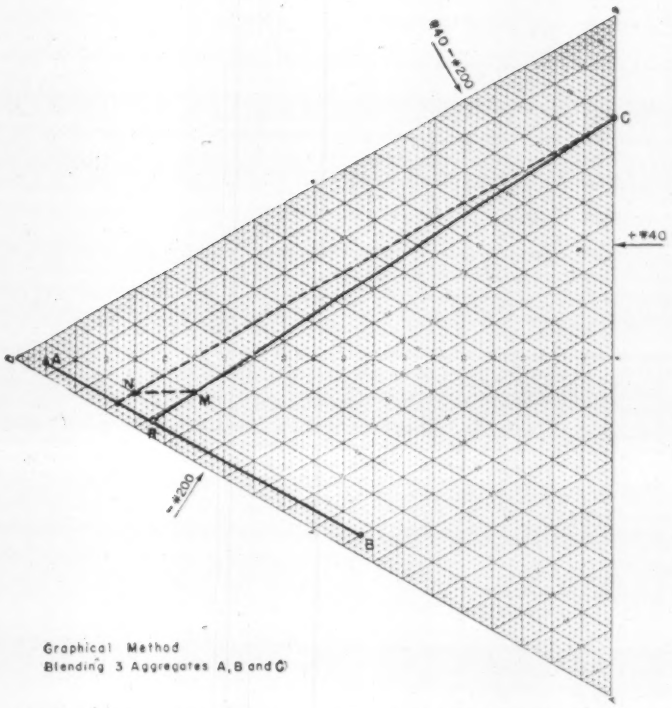


FIG. 3. SOLUTION ILLUSTRATES how three aggregates, grading of which is represented by points A, B, and C, can be proportioned to make blends that meet specifications, represented by points M and N and any point on the line MN.

that previously secured from Fig. 3, we find that A can vary from 60.2 percent to 74.3 percent; B can vary from 22.2 percent to 30.5 percent and C can vary from 3.5 percent to 9.3 percent.

Note the example has been worked only for that part of the problem covered by Group 2. Repeating the procedure for Group 1, the limits for A are 57.0 percent to 76.2 percent; the limits for B are 18.7 percent to 38.2 percent; the limits for C are 4.8 percent to 5.1 percent. Combine the two results as follows:

A	Group 1	57.0			76.2
	Group 2		60.2	74.3	
B	Group 1	18.7			38.2
	Group 2		22.2	30.5	
C	Group 1		4.8	5.1	
	Group 2	3.5			9.3

Interpretation of these results requires consideration of influence of each aggregate in each group. The influence of A is felt in both groups, but the influence of C is much more in Group 2 than in Group 1. Therefore, in this case, use the inside limits of A (60.2 to 74.3) and the Group 2 limits of C (3.5 to 9.3). With any combination of these limits, the percentage of B is always within the limits of 22.2 percent to 30.4 percent. In all cases, the proportion of B should be kept within its inside limits.

The above method will also show the possibility of combining only two of the aggregates to get the desired grading, if the line joining the two aggregate grading representations intersects the line joining the representations of the required coarsest grading and the finest grading.

The method does not apply to more than three aggregates; and these three aggregates must be combined on the basis of three size separates totaling 100 percent. If more separates than three are considered the grading may have to be divided into more than two groups. The grouping requires judgment; all groupings may not serve.

Measurement of the lines on the chart may be done with any convenient scale; the writer uses millimeters since that scale is on his slide rule. Using different colors, two or more groups may be easily graphed on one chart.

By mathematics:

The same solution for three-aggregate blends may be obtained by equations. Following is the application of the method to the problem of obtaining a blend of three aggregates which will form the fine limit desired in Group 2.

	Total Required	% Passing Available		
		A	B	C
+ 40	70	95	42	0
40 – 200	20	3	55	15
– 200	10	2	3	85

Let:

a = percent of A required
b = percent of B required
c = percent of C required
$100d$ = percent of + #40 in A
$100e$ = percent of + #40 in B
$100f$ = percent of + #40 in C
$100g$ = percent of – #200 in A
$100h$ = percent of – #200 in B
$100i$ = percent of – #200 in C

Then by simultaneous equations,

$$c = \frac{(100d-70)(g-h) - (100g-10)(d-e)}{(d-f)(g-h) - (d-e)(g-i)}$$

$$b = \frac{(100d-70) - (d-f)c}{d-e}$$

$$a = 100 - (b + c)$$

Solution:

$c = 9.3$ percent
$b = 30.5$ percent
$a = 100.0 - (9.3 + 30.5) = 60.2$ percent

These results check with the values obtained by the graphical method. If the procedure were repeated for the course limits, Group 2, and for both fine and course limits, Group 1, the figures could be combined and analyzed above in the graphical example.

By trial as a check:

This method is worthy of mention since it is simple and its application acts a check on the results of any of the above methods. Its use can be demonstrated by checking the results obtained for the blending of the aggregates A, B and C. The manner of arranging the work is important.

Columns 1, 2, 5, 8 and 12 are first set down. Columns 3, 6 and 9 are then headed by the respective trial percentages of each aggregate. In this case try 74.4 percent A, 22.1 percent B and 3.5 percent C. The percentages of A in column 2 are all multiplied by 0.744 and the results placed in column 3. Columns 6 and 9 are computed in similar manner. The results in column 11 are found by adding horizontally the results in columns 3, 6 and 9. Note that the

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Aggregate A			Aggregate B			Aggregate C			Combined	Specifi-	
Size	Total Pass.	Trial 74.4	Trial	Total Pass.	Trial 22.1	Trial	Total Pass.	Trial 3.5	Trial	74-22-3.5	cations	
—1"	95	70.7		100	22.1		100	3.5		96.3	95-100	100
—#4	21	15.6		100	22.1		100	3.5		41.2	40-55	52.5
—#40	5	3.7		58	12.8		100	3.5		20.0	20-30	30.0
—#200	2	1.5		3	0.7		85	3.0		5.2	5-10	10.0

total percentages shown in column 11 represent the coarsest blend that will meet the specifications.

More column spaces are left after columns 3, 6 and 9, so additional trial percentages may be tried and the results checked with the specifications. For instance, column 13 shows the results obtained with 60.2 percent A, 30.5 percent B and 9.3 percent C. This combination gives the finest blend that can be obtained to meet the specifications.

The methods outlined make short work of any problem in blending two and three unacceptable aggregates into one that is acceptable. Results quickly obtainable are as accurate as samplings taken are representative of their sources.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Substantial Performance

"A contractor may recover the value of his work, even though it be unfinished or defective, and the remedy of the owner is to have the price reduced to an amount necessary to perfect or complete the work. However, that rule applies only where the contractor has substantially complied with his undertaking, as that is all the law seems to require.[1] In other words, upon delivery of the work by the contractor, it must be in such state of completion and perfection that the owner was to some extent benefitted thereby."[2]

In order that a contractor may recover on the theory of substantial performance, he must have sought in good faith to comply with the terms of the contract, and where he has failed to perform in minor respects, the owner's remedy is to offset the amount due the contractor by the amount it will cost to remedy the defects.[3]

An owner of a building erected by a contractor is estopped from denying that the contractor did not fully comply with the specifications agreed upon in a written contract, where alterations and additions are made and added by oral agreement and where the contract has been substantially completed and the owner has taken possession of the building.

It has likewise been consistently held that a failure to do the work in a workmanlike manner, in such a case, does not deprive the builder of the right to recover something, either under the terms of the contract or on a quantum meruit basis, and such a recovery is usually a just and reasonable amount awarded for what the contractor actually spent and did on the job, especially in view of the fact that the owner has accepted the building and taken possession of it and was receiving the benefits of the contractor's labor and materials.[4]

For other cases on this subject, see ENR, Sept. 2, 1948, p. 80

(1) Davidson v. McGrath, 5 Ia. App. 125.
(2) Canulette & Son v. Cesi, 39 So. 2nd 853, (Court of Appeals of Louisiana, April 11, 1949.)
(3) Speed v. Baily, 153 Md. 655, 139 A. 780.
(4) Bratcher v. Moore, 219 S.W. 587 (Civil Court of Appeals of Texas, Feb. 21, 1949.)

Recovery of Architect's Fee For Building with Fixed Cost

An architect who is employed to prepare plans for a building, the cost of erection of which is not to exceed a fixed price, cannot recover for services when the building cannot be erected within the fixed cost limit.[1]

The court after reviewing many cases[2] on this subject states: "One who proposes to build may in his contract of employment of an architect state an amount as the limit of cost of the building which is to be erected and provide that at least reasonable conformity to this requirement shall be a condition under which the services shall be rendered; or it may result from the terms of the agreement that the cost of the proposed building shall not be in excess of a definite maximum. If either result follows from the construction of the contract, liability for services is negatived unless the building can be built for an amount reasonably within restrictions upon expenditure. But a contract may be made in which the sum named is only by way of estimate, and where instructions given require the preparation of plans and specifications for the construction of a building according to expressed wishes of the owner as to size, method, and details of construction. In such a case, mere nonconformity in the cost of construction under the plans and specifications with the amount so estimated does not prevent recovery. . . ."

(1) Bueche v. Eickenroht, 220 S.W. 2nd 911 (Court of Civil Appeals of Texas, April 6, 1949.)
(2) Smith v. Dickey, 74 Tex. 81, 11 S.W. 1043; Emerson v. Knoepell, Tex. Civ. App., 62 S.W. 541; Dudley v. Strain, Tex. Civ. App., 150 S.W. 778; Schwender v. Schrafft, 246 Mass. 543, 141 N.E. 511; Bodine v. Andrews, 47 App. Div. 495, 62 N.Y.S. 385.

Reformation of Contracts

Traditionally the power to grant reformation of written contracts has resided exclusively in courts of equity. Suits for reformation were not maintainable at common law.

The province of reformation is to make a writing express the bargain which the parties desired to put in writing. To justify reformation on the ground of mistake, the mistake must have been made in the drawing of the instrument and not in the making of the contract which it evidences. A mistake as to an existing condition, which leads either one or both of two parties to enter into a contract which they would not have entered into had they been apprised of the actual facts, does not justify reformation.

It is not what the parties would have intended if they had known better, but what they did intend at the time, informed as they were.

The party alleging the mistake must show exactly in what it consists and the correction that should be made. The evidence must be such as to leave no reasonable doubt upon the mind of the court as to either of these points. The mistake must be mutual and common to both parties to the instrument. It must appear that both have done what neither party intended. The burden of proof rests upon the party seeking to reform the instrument; and to sustain it, evidence that is plain and convincing beyond reasonable controversy is required. A mere preponderance of evidence is not sufficient. (Maryland Casualty Co. v. United States, 169 F.2d 102, Circuit Court of Appeals, Eighth District, Aug. 3, 1948).

Bill to Require Water Meters in All Homes

Maps Plan to End Long Spigot Binge, Avert Crises

...ew Party Wins ... Vote

EVEN WATER IS SHORT

IN RECENT YEARS, there has been considerable speculation, along with some presumably accurate estimates, about the depletion of various national resources.

Little or nothing has been done, however, about a possible shortage of water. But the demand for water has increased 150 ... it is said to have increased 150 ... the last 15 years, on a na... develops that ...ers have ...ject.

Water Short In Many Parts Of Nation

Basic Supply Down In Western Sections

The nation's most precious resource, water, is running short in many sections, a survey showed today.

In a few cases, such as at New York, the water shortage is a temporary matter, caused by a lack of rainfall.

But in ...

DEMAND FOR WATER FETTERS ECONOMY

National Survey Shows High and Unplanned Rises, With a Lopsided Distribution

The United States faces heavy economic losses in the foreseeable future because of unplanned, excessive increases in the use of its most precious mineral resource—water.

In recent years, overdevelopment of ground water resources by industry, more widespread use of air conditioning, overdevelopment for irrigation fostered by high

"You never miss water 'til the well runs dry"

N RATIONS WATER IN DROUGHT

RAIN, which has been affecting the water supplies of several ...stern seaboard states, hits the town of Roosevelt, N. J., where the ... wells have gone dry. Here, a number of residents form a "bucket ...aiting to get their share of water transported by two fire trucks ...e city of Hightstown, which is ten miles away.

CITY IS OUTGROWING YIEL

...ation by ...ng-Term Ba ...ently Needs

...er consump ...e "norma ...,000,000 gal ...stantial ra ...eeks, Nev ...ve only

The Health Department today informed the World-Telegram that the average person in this city—and that includes adults and little children, too—uses 110 gallons of water a day in the home.

Don't Have to Pay.

It is doubtful, authorities said, that New Yorkers are any cleaner than residents of other cities. They are just profligate of water because they don't have to pay for it officials agree.

Where domestic users have metered water service everyone is more careful since every extra gallon means money out of pocket.

There are some homes in this city and many more just outside where each house has an individual meter. In hese areas the average per capita consumption of water is from 50 to 75 gallons a day.

A survey of consumption in districts served by the Jamaica Water Supply Co. and the New York Water Service Corp. of Woodhaven, both in Queens, revealed that householders don't waste water when they are paying for it themselves. The same fact was borne out in Lynbrook, L. I., a Nassau County community served by the Long Island Water Corp.

Start Metering Now!

When there have been water shortages in past years, New York City has played around with some system to meter water used in residences. Then when plenty of rain or snow came, the whole thing was dropped until the next drought reminded officials again that metering might be a good idea.

As a result of this backing and filling, the city has made it easy for a careless public to waste some 200,000,000 gallons of water every day. Now, that waste has got us into a critical water shortage.

Even though there is only enough water in the reservoirs to last 60 days, New Yorkers go on being among the worst water wasters in the country. They flush toilets for a match or a cigaret butt. They wash dishes under an open tap. They find scores of ways to fritter away what's left of the supply. For the most part they seem indifferent to the danger threatening their own precious water.

Meters would provide the only way we see to bring that danger home to the public. With meters, people who waste water pay for it.

In New York suburban areas where water is metered, each person uses from 50-75 gallons daily. But in the city, where the supply is free, the average is 110 gallons every day.

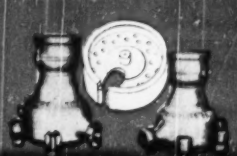
One startling fact about the huge consumption is that at least a quarter of the water is wasted. About 7% is lost before it ever gets to consumers—by leakage from the city's underground mains and pipes. Beyond that, the city estimates that about 20% of the water that does get to users is wasted due to leaky faucets and similar carelessness.

• **Metering**—Officials of the Dept. of Water Supply, Gas & Electricity think metering of water would stop a lot of this waste, and might thus prevent such ... as today's. But with metering ... metering, for domes... base

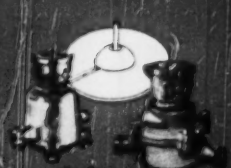
CAN YOU AFFORD TO BE WITHOUT METER CONTROL?

The serious water shortage in New York City has dramatized the fact that water supply levels are receding nationwide.

Many municipalities have lost or are losing an adequate supply of water through needless waste. Extravagant usage only occurs where the water system is not fully metered. If your system is one of these, don't wait until it's too late. We've prepared a complete program that will help you present the true facts on the advantages of 100 per cent metering to your customers and municipal authorities. Write today—no obligation involved.



Pittsburgh Equitable Meter Division
ROCKWELL MANUFACTURING COMPANY
PITTSBURGH 8, PA.
Atlanta · Boston · Chicago · Columbus · Houston · Kansas City · Los Angeles
New York · Pittsburgh · San Francisco · Seattle · Tulsa



dependable as a
WEINMAN PUMP

You can put complete reliance on what your WEINMAN representative tells you about your pumping requirements. His recommendations are based on years of "shirt sleeve" engineering experience in applied hydraulics. They are backed by an organization where every key man has at least 25 years of concentrated experience with one product—PUMPS. His recommendations are free for the asking and you incur no obligation. Just write, wire or phone.

for general
pumping service...
The WEINMAN Unipump

For use where space is limited . . . may be mounted in any position . . . very compact. Capacities 10 to 1000 G.P.M. Heads to 500 feet. For informative bulletin on UNIPUMPS, fill out the coupon below.

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.
296 SPRUCE ST. COLUMBUS 8, OHIO

Gentlemen:
I would like to learn more about WEINMAN Unipumps. Send Bulletin 72-C to:

NAME
FIRM
ADDRESS
CITY STATE

MUNICIPAL AFFAIRS

Public buildings program is making headway

Advance planning for the federal government's next big post office and public building program is getting started. The General Services Administrator and the Postmaster General have announced jointly that they have selected 312 of the 575 sites that Congress talked about in the last session, when it authorized $40,000,000 to get federal building projects ready for the next depression. The full program would cost nearly $350 million.

Present activities in site selection, acquisition and planning are financed out of a $12,000,000 appropriation for the current fiscal year. Of the sites so far chosen, 190 are holdovers from prewar days, acquired during the great federal building program that originated in the 30's. The remaining sites, selected recently, include a large number that have not yet been purchased.

Most of the projects planned for the 312 sites will cost less than $200,000 each. At 44 locations the government will invest from $1,000,000 to $15,000,000 in the new buildings. For the biggest jobs, the proposed cost limitations are: New Orleans Post Office, $14,900,000; Philadelphia Mint, $13,600,000; Houston Post Office and Court House, $12,300,000; and $8,000,000 apiece for buildings in Seattle, Baltimore and Cleveland. Projects costing $6,000,000 each are on the list for Los Angeles, Birmingham, Ala., Austin, Tex., and Harrisburg, Pa.

In the authorization bill, Congress directed that each congressional district participate in the benefits of the program. Construction of a single, high-cost project in a large city is allowed to serve more than one congressional district.

Annexation Policies

Indianapolis, Ind., has inaugurated a program for future annexations under which suburban areas seeking to join the city must submit copies of their petitions to all municipal departments which would provide services in the new districts. This is to halt haphazard annexations which have created problems for sewer, police, fire, and other municipal services. The former policy required annexation proposals to be submitted only to the City Plan Commission, which passed them along to city council with recommendations.

In many instances, areas were annexed without knowledge of the sanitation department. This led to sewer complications, such as in University Heights, which is only now scheduled to get sewers, 25 years after it "joined" the city.

Future petitioners must show what improvements in their areas are planned at their own expense. The city will consider these points in studying anticipated tax revenue compared to the expense of city services which will be provided.

New Houston Wharf

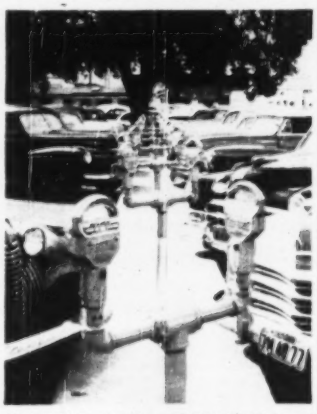
The new Wharf Nine—a $1,734,693 facility at the Port of Houston, Tex., is expected to be completed by the latter part of next April, according to A. J. Malloy, resident engineer.

Work on the project is now more than 50 percent completed and all main piling for the wharf has been driven. It occupies a site at the end of the Turning Basin and provides the port with completely modern wharf facilities.

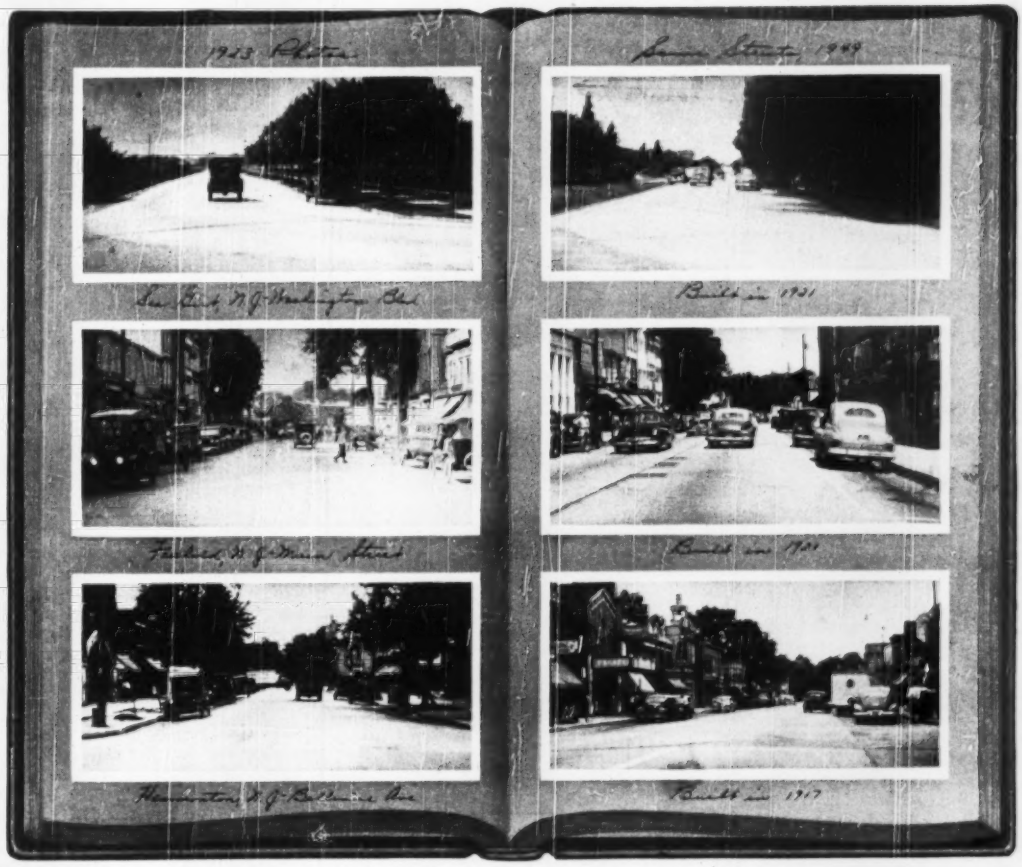
Mr. Malloy said a "great deal of the sand fill has been placed in the cellular bulkheads of the wharf and the contractor is going forward with the pouring of the concrete base on top of the cells."

Progress on the wharf, originally scheduled for completion in mid-March, was slowed in September by delay in the arrival of much needed steel piling.

Construction of the wharf is part of the $9,000,000 port improvement program now under way. Wharf Nine



PARKING LOT METERS—Y-shaped mountings for parking meters are used at the central curb in a municipal parking lot in Palo Alto, Calif. Accommodating 70 cars, the centrally located lot was purchased and improved with $111,000 earned from streetside parking meters.



Here today and still here tomorrow . . . that's the story of New Jersey's CONCRETE streets

If New Jersey motorists and taxpayers kept photo albums of local streets, they would be proud of such pages as those shown above. Many of their pavements have served 30 years and more at ***low annual cost*** under traffic they were not even designed to carry.

The album above shows three of these old pavements as they appeared in 1923 and in 1949. Many other pavements such as New Jersey's first concrete street, built in 1908 in New Brunswick, and the first concrete road on Route 24 between Washington and Phillipsburg, built in 1912, are still in service. Only concrete could give such long, dependable service under ever increasing weights and volumes of traffic.

Concrete pavements not only last longer but also cost less to maintain. In New Jersey, where roads and streets carry the heaviest axle loads in the country, records show that the average annual cost of maintaining one mile of 24-ft. concrete pavement is $141. Flexible type pavements cost four times as much, or $564. Also concrete usually costs less to build than other pavements of equal load-carrying capacity. That makes concrete the real ***low-annual-cost*** pavement.

Yet these are only some of concrete's advantages. It is safer, day or night, wet or dry, because its gritty surface has uniformly high skid-resistance. Its light color provides maximum visibility at night. It keeps driving costs down by saving on fuel, tires and repairs.

For more information about ***low-annual-cost*** concrete send for a free copy of "*Concrete Pavement Design.*" Distributed only in the U.S. and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. 1a-17, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

57% SAVED with Ramset

compare your fastening costs... see what Ramset can save...

If you fasten or anchor work into steel, concrete, masonry or other hard materials, use RAMSET'S free Cost Comparison Sheet and see for yourself what you can save with RAMSET. Just fill in your figures and compare slow, costly, laborious drilling, chipping, plugging and tapping with lightning fast, simple, economical RAMSET FASTENING SYSTEM.

Less than a minute, from start to finish, is needed to set any one of 65 different RAMSET drive pins or threaded studs. Simply READY the light, portable RAMSET Tool, place the tool against the work — and RAM! The fastener is SET instantly, tightly, easily!

See for yourself how RAMSET SYSTEM can save you time and money. Call your local RAMSET representative today or ask us for details and free Cost Comparison Sheets.

Ramset System

SAVES TIME . . . CUTS COST ON JOBS LIKE THESE:

Fastening—

- Metal framework to walls, floors and ceilings.
- Supports to concrete, brick and steel.
- Wood sills to concrete.
- Metal roofs or walls.
- Wiring and conduits.
- False ceilings and lighting fixtures.

Stemco Corporation • Cleveland 16, Ohio

FASTEN FASTER, EASIER, CHEAPER WITH RAMSET

will be owned and operated by the Houston-Harris County Ship Channel Navigation District.

It will have a front apron of 50 x 500 ft., an enclosed pier shed 150 x 500 ft., and a covered railroad train shed 45 x 150 ft.

Municipal Briefs

Parking Agency—Charles M. Upham, engineer-director of the American Road Builders Association, has been elected chairman of the District of Columbia Motor Vehicle Parking Agency for a 4-year term. He is in favor of private enterprise for parking rather than governmental operation.

Sewage Disposal Investigation—Massachusetts public health department desires investigation of sewage disposal facilities and industrial wastes in 49 communities of the state.

Sanitary Problems—An educational program for improving sanitary conditions in Syracuse, N. Y., has been recommended by the sanitation council. Among the problems to be considered would be air pollution, dumping along streets and highways, vermin and rats, rubbish disposal and stream pollution.

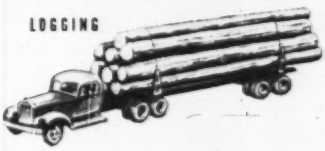
State Help for Schools—Connecticut legislature has passed a bill authorizing the state to pay one-third of the cost of new schools in various towns and cities. The eventual cost would be $200,000,000.

Profitable Concessions—For the 12 months ended June 30, last, New York City's revenue from advertising and vending in its subways and on its bus lines totaled $4,298,561. Most lucrative are the 112 drink vending machines. They grossed concessionaires more than $600,000 the first year.

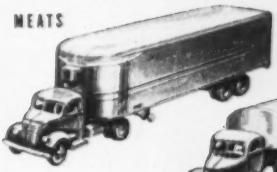
Superhighway Wanted—Business and industrial leaders of Rochester, N. Y., almost 2 to 1, believe that the city subway should be converted into a superhighway of some form, especially for express buses.

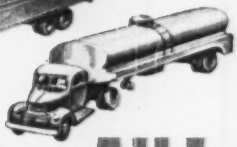
Pedestrian Control—A pedestrian control ordinance is being planned for St. Louis, Mo. In general, the tentative draft of the bill provides that pedestrians may not cross traffic-controlled streets against traffic signal lights or the reasonable directions of traffic policemen. It would also be unlawful for pedestrians to cross streets anywhere in the congested downtown district except at crosswalks.

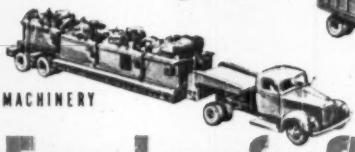
On Their Jobs in Over



100 Different Industries







Fruehaufs Outperform Them All!

YOU'LL find Fruehaufs *on the job* in over 100 different industries . . . hauling everything from lumber to livestock. And nearly everywhere, operating records show they're hauling the biggest loads the longest . . . costing less per mile, per day and per year of their continuous, uninterrupted operation.

The reason for Fruehauf's outstanding performance is basic. They're built to their jobs! They're *engineered*, from the ground up, for greater on-the-job efficiency—with feature after feature found in no other Trailer.

Fruehauf's *standard* line of Trailers offers a selection of over *seventeen* different body types. If one of these isn't the answer to your needs, Fruehauf engineers will design a unit especially for you.

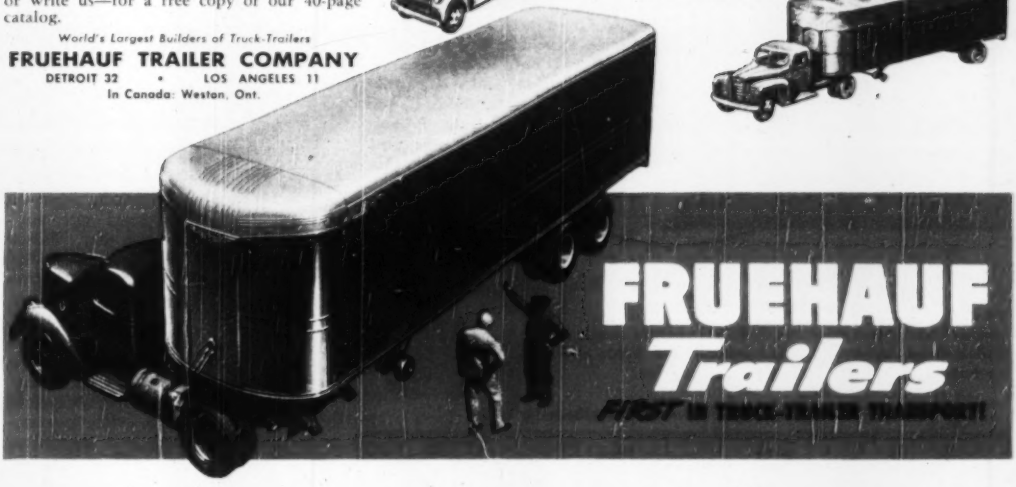
Ask your nearest Fruehauf representative—or write us—for a free copy of our 40-page catalog.

World's Largest Builders of Truck-Trailers

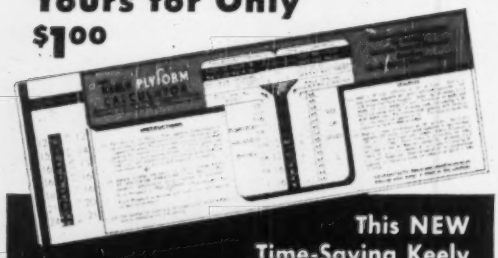
FRUEHAUF TRAILER COMPANY

DETROIT 32 • LOS ANGELES 11

In Canada: Weston, Ont.



Yours for Only $1.00



This NEW Time-Saving Keely

PLYFORM CALCULATOR

SAVE time designing and building forms of PlyForm, the concrete form grade of Douglas fir plywood. Handy slide-rule calculator gives construction data, based on hourly rate of pour. Included is booklet, "Design Assumptions for New Keely Calculator." Clip coupon — now!

DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma 2, Washington

Offer good in U. S. only.

Please send me ..... Keely PlyForm Calculators.
I enclose $1.00 each to cover costs.

Name .....

Address .....

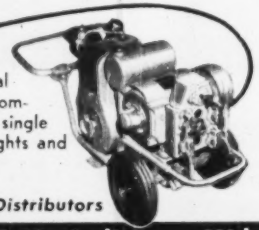
City ..... Zone ..... State .....

☐ Also please send me, at no cost, copies of "Concrete Forms of Douglas Fir Plywood", and "Handling PlyForm".

THE JACKSON

VIBRATORY SOIL COMPACTOR

This machine can be used to TREMENDOUS ADVANTAGE in compacting granular backfill under FACTORY FLOORS, in TRENCHES, BRIDGE APPROACHES, close to BRIDGE ABUTMENTS, along side FOUNDATIONS, under FOOTINGS, RAMPS, SIDEWALKS, MUNICIPAL PAVEMENTS, LOADING DOCKS; in compacting such granular soil as is used in EARTH FILL DAM CONSTRUCTION and many other places. Delivers up to 4500 1/2-ton vibratory blows per minute. Propels itself at 6 to 8 ft. per min. One man can guide two units side by side.



Operates on 110 volt, 3-phase AC from Jackson Portable Power Plant or commercial power. M-2 plant, at right, will operate 5 compactors. M-1 plant operates 2. Both generate single and 3-phase current and can be used for lights and operating other tools as well as compactors.

For Sale or Rent by Jackson Distributors

ELECTRIC TAMPER & EQUIPMENT CO. Ludington, Mich.

Parking Meter Revenue—Money received from parking meters has enabled East Liverpool, Ohio, to make a $66,000 contribution in matching funds for right of way to assure the construction next year of a $2,000,000 Ohio River highway to Wellsville.

State Office Building—At Richmond, Va., the Virginia Public Buildings Commission has voted to recommend the expansion of Capitol Square eastward into a state office buildings center some three times the size of the present square. The General Assembly has appropriated $2,500,000 for a new state office building.

Waterfront Plans—A large part of the waterfront of Buffalo, N. Y., may be isolated from the rest of the city if plans for the $4,100,000 Terrace grade elimination project are not revised to include an overhead structure at Genesee of Court Streets, says E. G. Spever, commissioner of public works. The N. Y. State Department of Public Works has appointed William J. Agnew as resident engineer for this track relocation project.

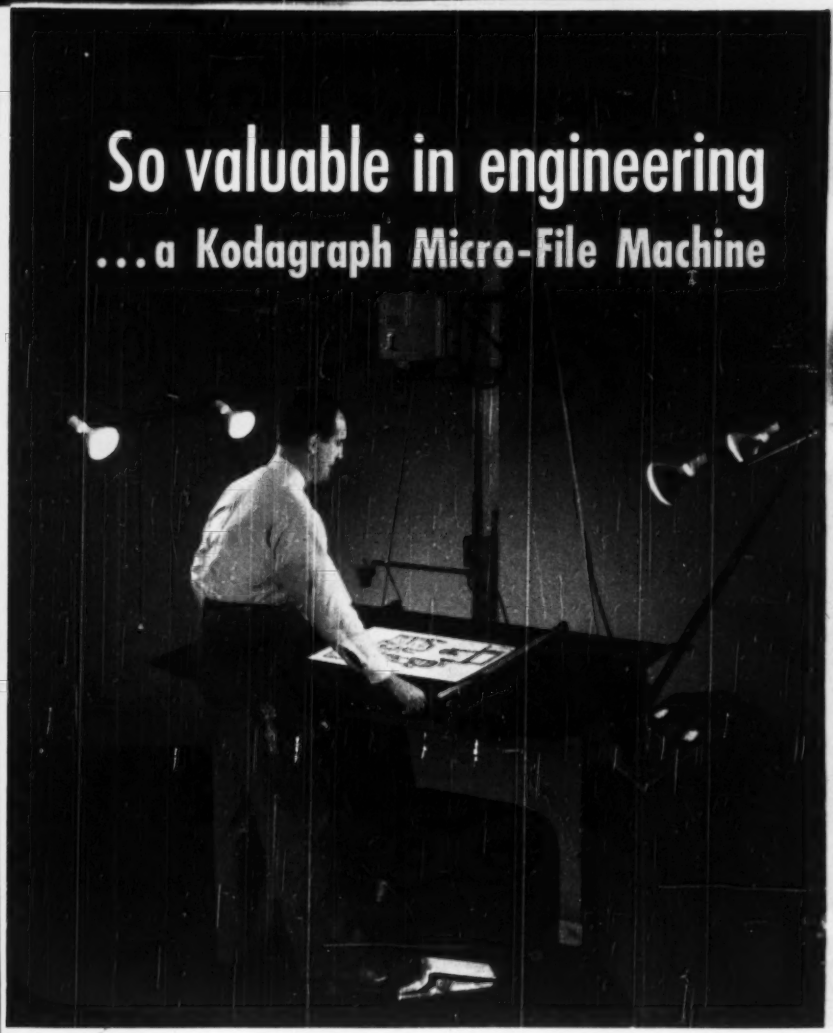
In Lieu of Taxes—Canadian cities are to receive annual payments of about $5,000,000 from the dominion government in lieu of taxes on federal property. In both Canada and the United States federal establishments have taken large pieces of property completely off local tax rolls. Estimated tax losses by large U. S. cities from exemption of federally-owned buildings range from $53,000 in Kansas City, Mo., to nearly $18,000,000 in Washington, D. C.

Polluted River—Massachusetts public health department reports that pollution of the Housatonic River has reached the nuisance stage, due to waste and sewage discharged into the stream. Recommendations for improvement have been made to Pittsfield, Dalton, Hinsdale, Lenox, Lee, and Great Barrington.

City Auditorium—City council of Lincoln, Neb., has informally approved plans for the proposed city auditorium. Architect Walter Wilson says the $2,500,000 now appropriated is just enough to cover the construction work.

Cost Sharing—Flood control construction work planned for Adams and North Adams, Mass., at an estimated cost of $14,000,000, is expected to start next March. The two municipalities, the state and the federal government will share the cost.

So valuable in engineering
...a Kodagraph Micro-File Machine



- **It microfilms your drawings** —old or new—automatically . . . with precision and accuracy.
- **It is easy, economical to operate** . . . records 675 24 x 36-inch drawings, for example, on a 100-foot roll of 35mm. Kodagraph Micro-File Film.
- **It allows you** to destroy old records, drawing . . . reclaim 98% of your filing space.
- **It increases protection** . . . simplifies and speeds reference.

PLACE AN ENGINEERING DRAWING . . . or any document—bound or unbound—on the copyboard . . . touch a foot-switch . . . and the Kodagraph Micro-File machine does the rest—

It photographs your material at tremendous reduction . . . records it on a compact roll of film which requires only 2% of the original storage space . . . which can be filed at your finger tips . . . or stored in the vault, if you wish.

You can refer to these film records quickly, conveniently . . . view each image enlarged sharp and clear on the screen of the Kodagraph Film Reader. And there's this advantage, too: With a Kodagraph Micro-File Enlarger, you can readily make large reference-size prints of maximum legibility—directly from any filmed image.

Now available—4 different models of Kodagraph Micro-File Machines

Created for the wide range of requirements in engineering departments—each is a precision machine . . . designed by Kodak . . . made by Kodak . . . for simplified, economical microfilming.

EASTMAN KODAK COMPANY
Industrial Photographic Division, Rochester 4, N. Y.

"Kodak" is a trade-mark

67

MAIL COUPON FOR FREE BOOKLET

Eastman Kodak Company
Industrial Photographic Division
Rochester 4, N. Y.

Please send illustrated literature about the complete line of Kodagraph Micro-File equipment.

Name _____
(please print)

Department _____

Company _____

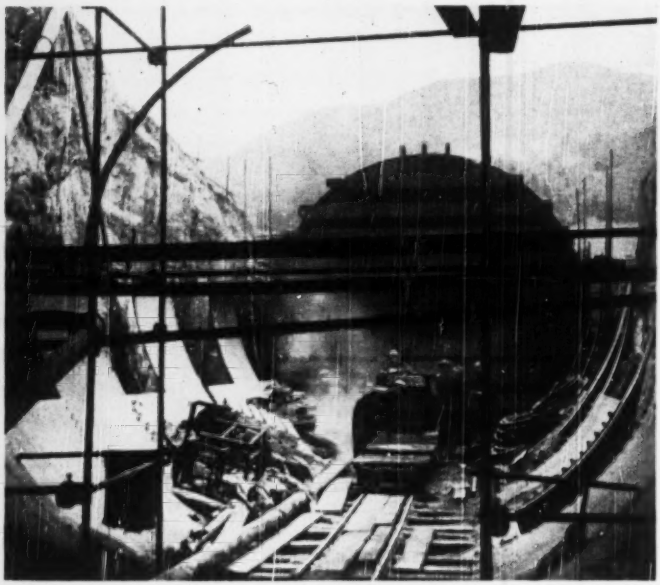
Street _____

City _____

State _____

Kodak

DEVELOPMENTS ABROAD



BRITAIN'S BIGGEST WATER POWER TUNNEL—The view above is one obtained by looking through the huge pipeline that will carry the millions of gallons of water from Clunie Dam to Clunie power station below the Falls of Tummel in the north of Scotland. This tunnel, 1.7 miles long, is the biggest of its kind in Great Britain, and another step forward in the North of Scotland Hydro Electric Board's plan to turn the highland waters into electric power. The tunnel, which took three years to drill through solid rock, will raise the level of Loch Tummel by 17 ft. Concrete lined, horseshoe in section equivalent to a dia. of 22 ft. 6 in., it will carry 2,700 mgd. Contractors are The Cementation Co. Ltd., Doncaster. Consulting engineers are Sir Alexander Gibb & Partners, Westminster, London. (British Combine photo.)

Britain sets up boards to curb water pollution

A group of river boards now being set up under the British River Boards Act of 1948, will provide a new administrative organization based on natural catchment areas instead of local government districts.

The River Pollution Prevention subcommittee of the Central Advisory Water Committee under the Ministry of Health considers that the Rivers Pollution Prevention Act of 1876, which is the principal act now in force, needs considerable revision and strengthening as it is well over 70 years old, and many conditions have changed in the meantime.

One of the main recommendations of this sub-committee is that effluents discharging into a stream should be required to comply with standards prescribed by the river boards. It is also recommended that the boards should have power to control new openings for the discharge of effluents into rivers or streams, and that they should be given notice of proposed changes in existing discharges.

Inter-American Sanitary Congress, Mexico, Mar. 16

The second Inter-American Sanitary Engineering Congress will be held in Mexico City, March 16-26. As in the first such congress at Santiago, Chile, in 1948, there will be in attendance not only sanitary engineers but also public health and public works officials, and allied professionals from all of the American republics.

Besides the full program of papers and discussions, several inspection trips are planned to public works at Xochimilco, sanitary engineering works at Nevcalpan, Cuantitlan, and Tlalnepantla, potable water works at Morelia, Lerma aqueduct, Cointzio Dam, conduit and treatment plant, and other places of interest. There will be a large exhibit of water works and modern sanitation equipment.

Inquiries should be addressed to Conference Chairman Alberto Ortiz Irigoyen, Calle de Campeche 244, Mexico D. F., Mexico; or to Ralph J. Van Derwerker, secretary, Inter-American Association of Sanitary Engineering, 2,001 Connecticut Ave., Washington 8, D. C.

Italy to reclaim land

Release of about $2,400,000 from the Italian counterpart fund (local currency equivalents of ECA dollar grants) to finance additional land reclamation projects in Italy for one year has been announced by the Economic Administration in Washington and Rome.

Of this amount, a million dollars or more will be used to finance projects in five zones of the Latium region near Rome, and the remainder will go toward improving eight zones in the Emilia area of northern Italy.

The improvements in the Latium region will give work to 3,000 and will result in the irrigation of 10,000 acres, the drainage of another 10,000 acres, and the flood protection of 2,250 acres. In addition, 38 miles of road will be constructed.

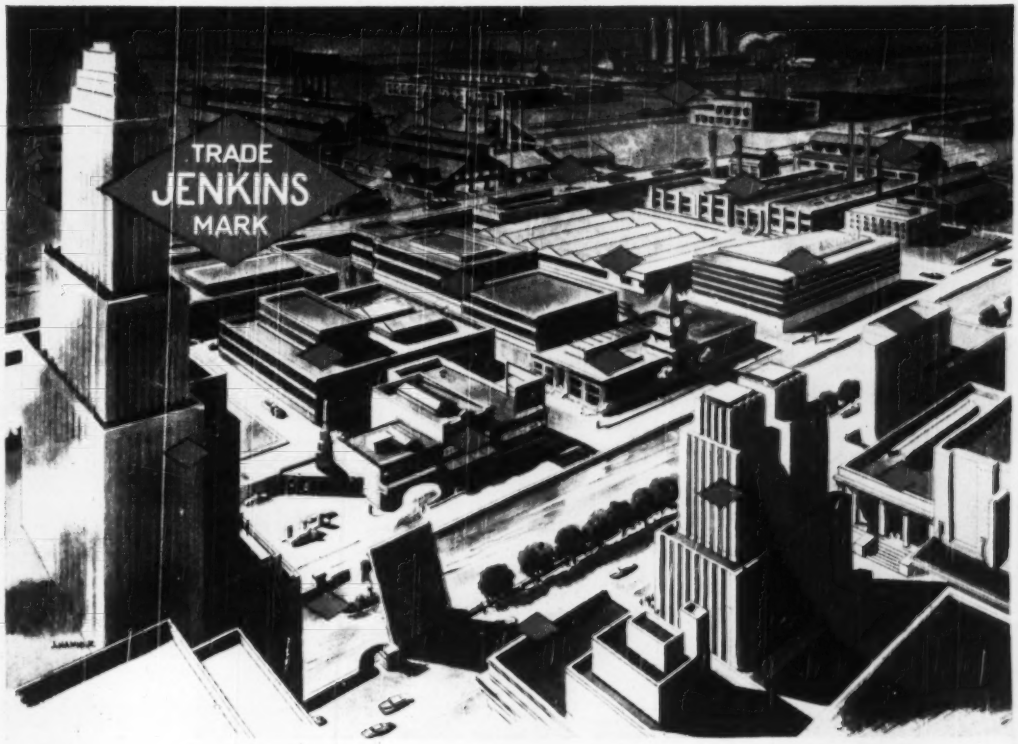
Projects in the Emilia area will provide immediate employment for 450 workers and an equal number of workers off-site. The program includes the construction of 25 miles of drainage canals to service 150,000 acres, the construction of an aqueduct to bring drinking water to 4,000 inhabitants, irrigation of 10,000 acres, and provision of water for 4,500 cattle.

It is estimated that, by 1952, projects in the Emilia region will result in the irrigation of 25,000 acres, drainage of 250,000 acres and flood control for 25,000 acres. The improved land will be able to accommodate 1,000 additional farm workers.

Colombia—A new power plant is being built at Cartagena. Realizing that an adequate power supply is an important requisite for industrial growth, the Chamber of Commerce and the Empresas Publicas Municipales (Public Works Commission) jointly promoted the new power plant.

Worthington Pump and Machinery Corp. was awarded the contract to furnish all the equipment. Paul W. Anderson, consulting engineer of New York, is the designer.

The initial equipment will include two 2500-kw. turbine generators with condensers and all auxiliaries. Two Foster Wheeler boilers will each provide 40,000 lbs. of steam per hour at 430 lb. pressure and 750 deg. F. temperature.



Acres of Diamonds

YOU SEE only the structures of commerce, soaring skyward . . . the strange new shapes of industry stretching beyond. Yet all around you are acres of diamonds. Diamonds that identify the thousands of Jenkins Valves on duty in the many different types of buildings essential to modern civilization.

Nothing holds its value like the diamond, in valves as in gems. Four generations of American builders have placed their trust in the Jenkins diamond and signature trade mark. Today, as in 1864, Jenkins Valves are the choice of men who plan shrewdly, always with an eye to future maintenance and operating costs.

They know that Jenkins builds extra endurance into Valves — proved by long life and low upkeep cost records in every type of service. They know, too, that there is extra value in the *experience* Jenkins Valve specialists can apply to any question of selection, installation, or maintenance.

You pay no more for Jenkins Valves, despite their supe ior quality and service. So why not let the Jenkins diamond serve as your guide to valve economy . . . for new installations, for all replacements. *Sold through leading Industrial Distributors everywhere.*

JENKINS BROS.

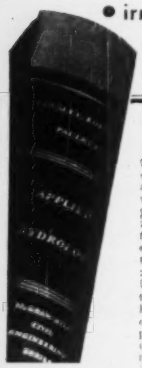
80 White St., New York 13;
Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago;
San Francisco. Jenkins Bros., Ltd., Montreal.

JENKINS
LOOK FOR THE DIAMOND MARK
VALVES
SINCE 1864 TRADE JENKINS MARK

Jenkins Bros

PRACTICAL ANSWERS TO HYDROLOGIC PROBLEMS

- in flood control work
- irrigation
- drainage, etc.



HERE'S an engineer's guide to today's practical uses of hydrologic theory, data and technique . . . a clear explanation of the development and application of practical methods for computing and forecasting streamflow, evaporation, snowmelt, etc. The book covers those techniques and problems characteristic of hydrology in the United States and takes you through every phase of the hydrologic cycle. It examines data on basic and complex phenomena of the hydrologic cycle . . . shows how to use the various hydrologic tools in the solution of problems . . . and gives information of importance in highway and airport drainage, small water-supply projects, storm-sewer design, and in other hydrologic engineering operations.

JUST OUT!

APPLIED HYDROLOGY

By RAY K. LINSLEY, MAX A. KOHLER and JOSEPH L. H. PAULHUS, all of the United States Weather Bureau

689 pages, 6 x 9, scores of charts, graphs and photographs, $8.50

THIS book covers all important phases of hydrology—from atmospheric temperature, measurement of precipitation, and evaporation formulas—to the runoff cycle, streamflow routing machines, and the design of dams and reservoirs. It discusses hydrograph analysis, waves, design criteria, design and operation of water-control works, river forecasting, etc. Quick-reference appendixes provide methods for graphical correlation of two, three, four or more variables and give sources of hydrologic data, physical constants, conversion tables and equivalents.

Special Features

- Presents techniques for correlating hydrologic data
- Describes use of multiple graphical correlation in development of rainfall-runoff and streamflow-routing relations
- Analyzes unit hydrograph, snowmelt, storm analysis

SEE THIS BOOK 10 DAYS FREE

McGRAW-HILL

McGraw-Hill Book Co., Inc.,
330 W. 42nd St.,
New York 18, N. Y.

Send me Linsley, Kohler and Paulhus' APPLIED HYDROLOGY for 10 days' examination on approval. In 10 days I will remit $8.50, plus few cents for delivery, or return book postpaid. (We pay for delivery if you remit with this coupon; same return privilege.)

Name .....

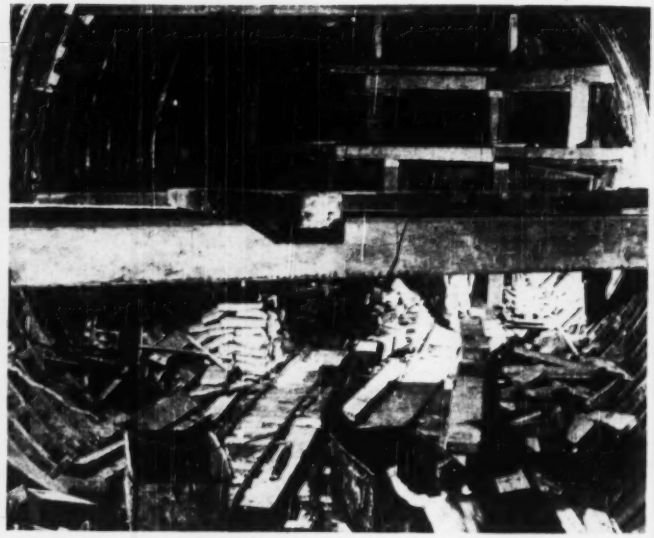
Address .....

City ..... Zone ..... State .....

Company .....

Position NR-1-5-50

This offer applies to U. S. only.



TUNNEL FOR FESTIVAL TRAFFIC—Eighty feet below London's street level men are working day and night to link Waterloo Station, a South London railroad terminal, with the nearby site of the 1951 Festival of Britain. The tunnel, 26 ft. in diameter, will run from a subway station adjoining the railway terminal to the festival site, where three banks of escalators will carry visitors to the surface. In the tunnel 4,000 long tons of clay have so far been excavated. It is carried to the surface by the trollies in the foreground. (Eastern Publishers Service Photo)

Sewage Gas Use

Australia—The Adelaide Engineering & Water Supply Department has prepared plans for the full utilization of sewage gas for power generation and heating at three major-sized sewage treatment works in South Australia.

One installation, at Glenelg, has been in operation since 1942. Another, at Port Adelaide, was commissioned recently. A third, at Dry Creek, is in the preparatory stage.

Possibly because Australia has entered this field of waste utilization relatively late, the plant designers have been able to profit from the mistakes of others and to adapt the best features of American and British practices. Thus the design of the screening plant and primary sedimentation tanks follows American practice while the aeration tanks and final settling tanks are based on British designs.

The mechanical installation at Glenelg consists of two 220-b.h.p. dual-fuel National gas-oil engines driving Holmes Connersville type rotary compressors, and one 165-b.h.p. dual-fuel National gas-oil engine driving a 100 kva alternator. Based on tests, a total heat recovery of about 72 to 75 percent is said to be possible with this plant.

While at Glenelg one of the two primary digestion tanks is provided with a floating cover and the other mounted with a spiral carriage gas holder, both tanks at Port Adelaide have fixed covers and a spiral carriage gas holder is mounted in a separate tank. The mechanical installation at Port Adelaide consists of two 275 b.h.p. National dual-fuel engines which are direct-coupled to two 22 kva. three-phase alternators.

High yield

The projected plant at Dry Creek has been designed for a population of 279,000. It will be much larger than the first two installations, handling more than 110,000 lb. of volatile solids a day, including all the waste from the metropolitan abattoirs. The gas yield is expected to range from 825,000 to 869,000 cu. ft. per day. The design provides for a gas holder with a capacity of 290,000 cu. ft. (compared with 30,000 cu. ft. in the first two installations). It will consist of a steel tank 84 ft. internal diameter and 30 ft. high, mounted on a concrete base, and will be provided with two frame-guided lifts each of which will be 30 ft. high.

The mechanical installation will consist of eight 650-b.h.p. dual-fuel engines each driving a 600 kw. alternator at 300 r.p.m.

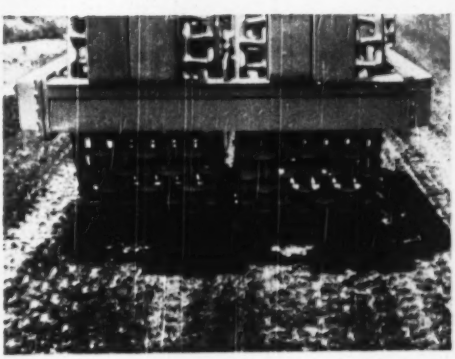
The NEW HYSTER GRID ROLLER

Revolutionizes Black Top Salvage Jobs

HOW IT WORKS...WHAT IT DOES

1. Black top is scarified by motor grader pulling Grid Roller.
2. Scarified black top is pulverized to a maximum of small "fines" by Grid Roller.
3. Pulverized black top is windrowed—road bed cleaned by motor grader—compacted by Grid Roller.
4. Windrow is spread and oil applied, material mixed and relaid and then compacted by Grid Roller. Now ready for seal coat.

HOW IT SAVES TIME AND MATERIAL



Salvaged Black Top compacted in place and ready for seal coat

1. In ONE day ONE man with motor grader and Grid Roller can salvage and prepare ONE MILE of black top road for oiling.
2. Grid Roller produces greater abundance of FINE MATERIAL.
3. Oil usage reduced up to ¾ of a gallon per cubic yard—on one county road job a savings of $343 per mile in oil was effected.
4. Grid Roller salvages all types of black top material. NO NEED TO HAUL AWAY OLD MATERIAL.

Sold exclusively by your "CATERPILLAR" DEALER. CONSULT HIM FOR FACTS, FIGURES, LITERATURE.

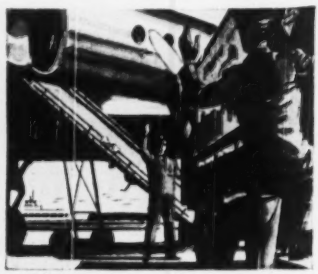
HYSTER® COMPANY

2953 N. E. CLACKAMAS, PORTLAND 8, OREGON
1853 NORTH ADAMS ST., PEORIA 1, ILLINOIS

Press breaks down — but $2.88 keeps editions rolling

Press broke down at 5 P.M., at end of evening edition's run. But this publisher got replacement parts in a hurry the same way he gets electros, mats, news photos —by Air Express. An 18-lb. carton traveled 500 miles, was delivered by 11 P.M. Shipping charge $2.88. Morning edition published as usual.

Air Express is the best air shipping buy to keep any business rolling, since low rates include door-to-door service. Answers your problems because Air Express is *fastest* and *most convenient*.



All Scheduled Airline flights carry Air Express. So shipments *keep moving*. All business profits from its regular use. Improves customer service; manpower or equipment never stands idle.

Only Air Express gives you all these advantages

World's fastest shipping service.
Special door-to-door service at no extra cost.
One-carrier responsibility all the way.
1150 cities served direct by air; air-rail to 22,000 off-airline offices.
Experienced Air Express has handled over 25 million shipments.

Because of these advantages, regular use of Air Express pays. It's your best air shipping buy. For fastest shipping action, phone Air Express Division, Railway Express Agency. (Many low commodity rates in effect. Investigate.)

AIR EXPRESS
GETS THERE FIRST

Rates include pick-up and delivery door to door in all principal towns and cities

A service of
Railway Express Agency and the
SCHEDULED AIRLINES of the U.S.

Elections and Activities

An organizational meeting of the Erie County Chapter of the New York Good Roads Association was held in Hotel Statler, Buffalo and the following temporary officers elected: President, Charles P. Penney; first vice-president, Charles D. Zacher; second vice president, Henry C. Bower; regional governor, Rob Roy McLeod; secretary, Forrest G. Red; and treasurer, Leslie M. Farr.

Robert R. Shoemaker, chief harbor engineer, Port of Long Beach, Calif., has been elected president of the Los Angeles section, American Society of Civil Engineers, for the 1950 term. The new first vice-president is Paul Baumann, assistant chief engineer, Los Angeles County Flood Control District, and the second vice-president is Linne C. Larson, member of the consulting engineering firm of Taylor and Taylor. New treasurer is Ralph C. Durke, principal civil engineer, Los Angeles Department of Water and Power. Homer W. Jorgensen, sanitary engineer, Los Angeles County Sanitation Districts, continues as secretary.

David B. Steinman, New York, urged professional engineers to consolidate their 90 technical associations into one large professional group. Speaking in Daytona Beach before the Florida chapter of the National Society of Professional Engineers, he said that "no other profession has broken itself up into 90 separate groups." To illustrate unity and strength, Mr. Steinman, founder of the national society, cited such groups as the American Medical Association and the American Bar Association.

Joseph J. Cermak of Washington, D. C. has been re-elected secretary of the Structural Clay Products Institute, which has offices in Washington. Re-elected as president at the Group's annual industry convention at White Sulphur Springs, W. Va., recently was W. J. Goodwin, Jr., of Des Moines, Iowa.

Clarence L. Eckel, Dean of the University of Colorado College of Engineering was installed as president of the National Council of State Boards of Engineering Examiners, replacing Alexander Blair. Russell G. Warner, New Haven, Conn., was made vice-president.

Rolling Steel DOORS

Mahon Power Operated Rolling Steel Doors installed in six openings in the American Metal Products Company's plant, Detroit, Michigan.

Manually, Mechanically, or Power Operated

For openings in industrial and commercial buildings, the quick opening, quick closing, vertically acting rolling steel door embodies more desirable features than any other type of door. Open or closed, it occupies no useable space inside or outside the opening . . . its coiling action requires a minimum of headroom above the opening . . . its all steel construction assures permanence and a lifetime of trouble-free service—and, most important, it provides a maximum of protection against intrusion and fire. If you select Mahon Rolling Steel Doors, whether it be for a railroad opening, truck opening, or a firewall opening, you can count on the latest developments in doors of this type . . . more compact and more practical operating devices, curtain slats of Aluminum, Stainless Steel, or Galvanized Steel which has been scientifically cleaned, phosphated, and coated with high temperature oven baked rust inhibiting enamel prior to roll-forming. These, and many other desirable features that characterize Mahon Rolling Steel Doors, merit your consideration. See Sweet's Files for complete information, or write for Catalog No. G-49.

THE R. C. MAHON COMPANY

Detroit 11, Michigan • Western Sales Division, Chicago 4, Illinois

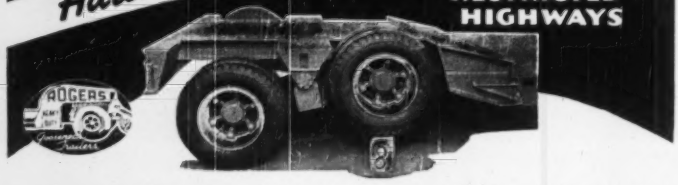
Representatives in All Principal Cities

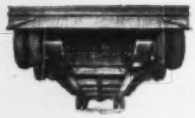
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Steel Walls; Steel Deck for Roofs, Partitions, Acoustical Ceilings, and Permanent Concrete Floor Forms.

MAHON

ROGERS WALKING BEAM TRAILERS

Haul HEAVY PROFITABLE LOADS OVER RESTRICTED HIGHWAYS





Worm's eye view showing the "walking beams", widely spaced bearings and heavy frame construction.

Adequate "rubber" capacity. Wheels that oscillate to distribute the load over all tires regardless of road irregularities. Both are essential to practical hauling of heavy machinery and equipment.

Both are accomplished in this large capacity Rogers Trailer, yet it is only 8 feet wide to conform to the requirements of some states.

Entirely satisfactory performance is accomplished by means of a "walking beam" such as you have seen on steam boats. If you use heavy duty trailers, write for the Rogers Catalog which illustrates and describes a type and size for every purpose.

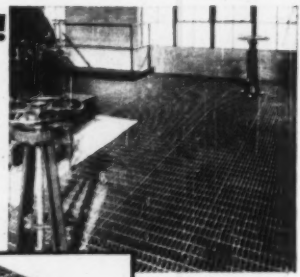
ROGERS BROTHERS CORPORATION
139 ORCHARD ST. • ALBION, PA.

ROGERS TRAILERS

EXPERIENCE *builds 'em* • PERFORMANCE *sells 'em*

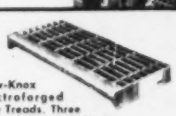
the IDEAL OPEN FLOOR for every industry!

IT'S Blaw-Knox *Electroforged* Steel Grating! *Exceptionally strong,* electroforged into one solid piece. *Non-slip* twisted bar for safe, sure footing. Maximum open area. Self-cleaning, no sharp corners to clog. Easily installed and easily maintained. Adaptable to many uses, indoors and out, for every industry.



MEETS ALL REQUIREMENTS FOR

Open flooring
Sidewalk doors
Bridge surfacing
Catwalks
Subway grating
Sidewalks
Stair treads
Many other uses



Blaw-Knox Electroforged Stair Treads. Three types available: Rolled diamond checker plate nosing (illustrated), twisted cross-bar nosing, or abrasive nosing.

SEND FOR BULLETIN 2296 TODAY!

BLAW-KNOX DIVISION
of Blaw-Knox Company
2001 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

BLAW-KNOX ELECTROFORGED STEEL GRATING

Lester V. Johnson of Arlington, Va., was reelected president of the Virginia Society of Professional Engineers recently. Also reelected were John B. McGaughty of Norfolk, first vice-president; James A. Rives of Blacksburg, second vice-pres.; E. H. Ruehl of Richmond, sec. and J. S. Miller of Charlottesville, director-at-large.

MAJOR MEETINGS

Conference on Industrial and Safety Problems of Nuclear Technology, General Electric Auditorium, 570 Lexington Ave., New York City, Jan. 10-12.

Canadian Construction Association, Mount Royal Hotel, Montreal, Que., Jan. 15-18.

Associated Equipment Distributors, Stevens Hotel, Chicago, Ill., Jan. 15-19.

American Water Works Association, N. Y. Section midwinter luncheon, Hotel Statler, New York, N. Y., Jan. 17.

American Society of Civil Engineers, annual meeting, Commodore Hotel, New York City, Jan. 18-20.

New York State Sewage Works Association, annual meeting, Hotel Statler, N. Y. City, Jan. 20-21.

National Sand & Gravel Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 22-27.

National Ready Mixed Concrete Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 22-27.

Conference on Polluted Irrigation Water, Auspices Environmental Health Study Section, Public Health Service; El Paso Health Dept., and Texas State Health Dept., El Paso, Tex., Jan. 27.

National Crushed Stone Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 29-Feb. 2.

Midwest Materials Handling Conference, Technology Center, Illinois Institute of Technology, Chicago, Ill. Jan. 30-Feb. 1.

Association of Asphalt Paving Technologists, annual business meeting, Statler Hotel, St. Louis, Mo., Feb. 6-7.

National Association of Home Builders, Congress and Stevens Hotels, Chicago, Ill., Feb. 19-23.

American Concrete Institute, annual convention, Edgewater Beach Hotel, Chicago, Ill., Feb. 20-22.

National Council for Stream Improvement, annual meeting, Waldorf-Astoria Hotel, N. Y. City, Feb. 20-22.

Minnesota Federation of Engineering Societies, exposition, Minneapolis Armory, Minneapolis, Minn., Feb. 21-23.

Ontario Road Builders' Association, Royal York Hotel, Toronto, Ont., Feb. 22.

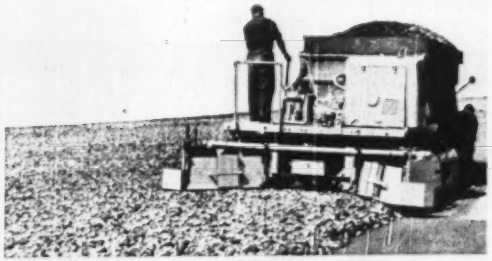
American Concrete Pipe Association, annual convention, Fairmont Hotel, San Francisco, Calif., Feb. 22-25.

Associated General Contractors of America, national convention, San Francisco, Calif., Feb. 27-March 3.

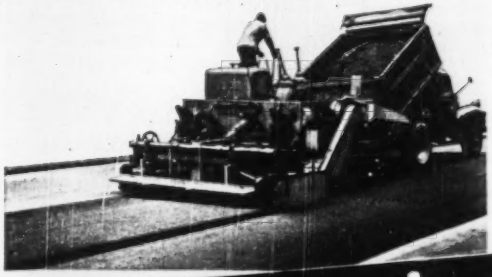
American Road Builders Association, annual meeting, Netherland Plaza Hotel, Cincinnati, Ohio, March 6-9.

New Jersey Sewage Works Association, annual convention, Hotel Stacy-Trent, Trenton, N. J., March 22-24.

National Plastics Exposition, Navy Pier, Chicago, Ill., March 28-31.



New Paver-Type Aggregate Spreader, first low cost, self-propelled spreader that operates entirely on the subgrade, accurately lays all base and surface aggregates, plant-mixed stabilized soil and free-flowing bituminous mixtures up to 12½′ (25′ in tandem).

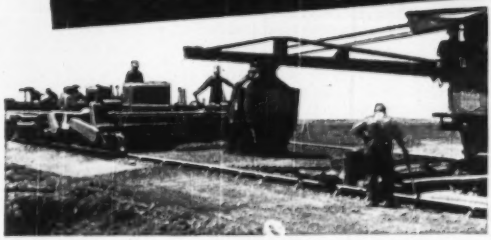


Model BP-5 Bituminous Paver, the automatic leveling, precision paver you've been waiting for, that lays all bituminous materials up to 12½′ with almost instant width adjustability — no adding or removing parts.

Jaeger offers

new ways to cut paving cost

on 1950 jobs

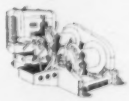


Diagonal Screed Finishers and Concrete Screw Spreaders to "team" with your dual-drum paver. Also cost-saving Combination Spreader-Finisher for single screed work.

"Air Plus" Compressors in new standard sizes (75 to 600 ft.) that do 4 days' work in 3 with the same men and tools.

"Sure Prime" Pumps
Many 1950 improvements for lower cost pumping.

"Speedline" Mixers
More mixing action, advanced construction in 1950 models.



2-Speed Hoists
and new model Hoister Tower with platform or bucket.

Don't figure new jobs with old tools: See your Jaeger distributor or send for Catalogs on the new equipment you'll need to bid and build successfully in 1950.

THE JAEGER MACHINE CO., Columbus 16, Ohio
Leading distributors in 130 cities of the United States and Canada sell, rent and service Jaeger construction and paving machinery.

JAEGER
engineered equipment

Tuffy

TRADE MARK ®

SLINGS

Entirely Unlike Any Other

Scores of wires, stranded into 9 parts, then machine woven into an interlaced wire fabric—that is the unique patented construction which gives Tuffy extraordinary flexibility and stamina.

Super TOUGH—On every kind of load, under all kinds of pulls and with every type of hitch, Tuffy Slings have proved their superiority and universal adaptability.

Super-FLEXIBLE—Tie Tuffy Slings into knots, kink them, flatten the eyes. Observe how many more times you can straighten Tuffy Slings out without material damage. Note too, that cutting any one of the 9 parts will not result in stranding the sling.

Tested Strength Twice Safe Working Load Limit

Each Tuffy sling is proof-tested to twice the safe working load indicated on its metal tag. Tuffy's interlaced construction makes possible eye splices averaging 95% of fabric strength.

9 Types—Factory Fitted Or Unspliced on The Reel

Try any one of the 9 factory packaged types — for choker, basket or bridle hitches. Prove to your own satisfaction their money saving worth to you. Or, if you're rigged for splicing—Tuffy interlaced wire sling fabric is available on the reel.

union *Wire Rope* **CORPORATION**

2228 Manchester Ave.,
Kansas City, Mo.
Send Tuffy Sling details.

FIRM NAME_____

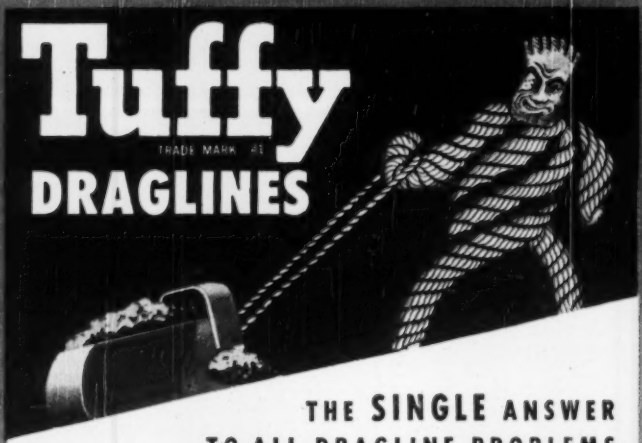
ADDRESS_____

CITY_____ STATE_____

Now.... Tuffy

TRADE MARK ®

DRAGLINES



THE SINGLE ANSWER TO ALL DRAGLINE PROBLEMS

Just the Size, Length and Name . . . TUFFY . . . No More Confusing Specifications

Try this simple way of buying draglines. Put Tuffy draglines to any test. Watch them come out on top with unequaled, money saving service records.

Extra Flexibility. Wires of the finest steel in a construction designed for universal dragline service, gives Tuffy draglines the extra flexibility needed without sacrificing other qualities.

Maximum Abrasive Resistance is obtained by finer technic in construction with materials toughened to withstand more abrasive wear.

Easy To Handle because it is pliable. Tuffy Draglines spool better and ride better on grooves.

Hugs Drum When Casting because jerking, pulling and bending stresses do not distort its pliable construction.

Stamina Proved In All Operations. Operating in dry dirt, wet dirt, sand, gravel, rock and minerals and on all types of equipment, Tuffy Draglines stand up under more days of service and move far more yardage than the best previous average obtained by many operators.

Remember, Tuffy is the name to remember.

union *Wire Rope* **corporation**

2228 Manchester Ave., K. C., Mo. Send Complete details on Tuffy Draglines.

FIRM NAME_____

ADDRESS_____

CITY_____ STATE_____

union *Wire Rope*

The Ultimate Low Cost Wire Rope

Simplifies Wire Rope Buying!

Remember the name Tuffy and you can forget complicated wire rope specifications. Union Wire Rope Engineers have developed wire rope constructions and braided wire fabric constructions to serve universally in specific fields of operation. Now all you need to do is specify the diameter and the length and the name Tuffy Scraper, Tuffy Dragline or Tuffy Sling. It is just that simple to buy the ultimate low cost wire rope or sling.

BETTER LIVING
through
BETTER ROADS
LET'S FACE THE FACTS
GOOD AND BAD

Citizens of the U.S.A. have paid road builders $35 Billion for highways. Almost every citizen will agree it is about the best investment the U.S.A. ever made. I.e., they will when informed that it generates an annual income of more than $30 Billion in oil, rubber, motor cars, trucks, roadside service, etc.

In 1949 the U.S.A. bought $1.7 Billion worth of highways. That marked the highest rate of investment in the history of road building.

This brings the highway system up to a point adequate for handling the traffic of 1932 or 1933. Since 1933, the number of vehicles on the road has increased from 24½ million to nearly 44 million.

Road Builders Face a Selling Job

The deficiency in highways is enormous. Estimates of this deficit range as follows: $11 Billion by U.S. Bureau of Public Roads; $28 Billion by Joint Economic Committee of Congress; $30 Billion by American Association of State Highway Officials and $40 Billion by the American Road Builders Association. These estimates cover the building and rebuilding of highways ranging from 28,000 to the whole system consisting of 3,300,000 miles.

This confronts Road Builders with a challenge to become better Road Salesmen concentrating on the job of selling all legislative bodies that the road deficit can be wiped out relatively cheap considering what is at stake—providing they are built by contract—the American way of giving the highway dollar the highest possible purchasing power.

Tuffy Scraper Rope

TRADE MARK ®

Picks Up and Lays Down More Pay Dirt on All Types of Wheel Scrapers

"Two thirds fewer cuts due to drum crushing." "Wears out instead of breaking." "Gave 33-1/3 more service." "Half as much down time due to re-wiring." These are typical comments by users. Change over one scraper to Tuffy. Test its extra yardage handling ability and you'll change to Tuffy Scraper Rope on your whole fleet.

Tuffy is Tailored to Take:

- Greater Drum Crushing Abuse
- Sharper Bends Over Small Sheaves
- Angle Pulls Thru Swiveled Sheaves
- Crawling On Guide Roll Flanges
- Heavy Line Pull . . . Rapid Line Speed
- Multiplied Shock of Load On Slack Line

Tuffy—The Single Answer To All Scraper Rope Problems

For longer runs and lower costs, mount Tuffy reels on your scrapers. The name Tuffy, the diameter and the length—that's how simple it is to buy scraper rope for new yardage records. Remember, Tuffy is the name to remember.

union Wire Rope corporation

2228 Manchester Ave., K. C., Mo. Send Complete details on Tuffy Scraper Rope.

FIRM NAME_____

ADDRESS_____

CITY_____ STATE_____

union Wire Rope corporation

2228 Manchester Avenue, Kansas City 3, Mo.

Send information on:

- ☐ Slings
- ☐ Draglines
- ☐ Scraper Rope
- ☐ Union-formed wire rope

FIRM NAME _____

BY _____

ADDRESS _____

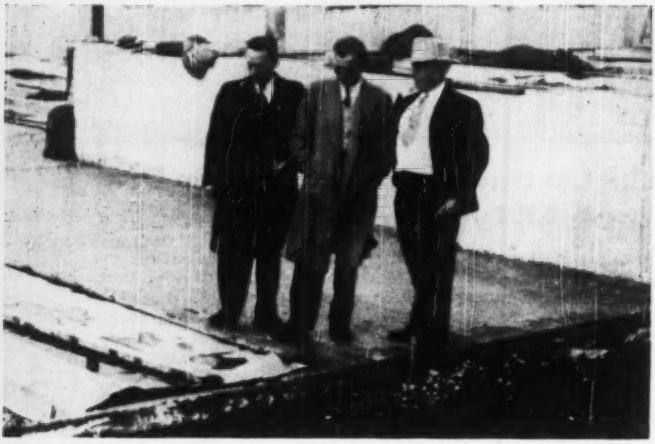
CITY _____ **ZONE** ____ **STATE** _____

MEN AND JOBS

S. C. Martin, senior sanitary engineer, Public Health Service, has been appointed head of the Great Lakes Drainage Basin office of the Division of Water Pollution Control. The office at 525 W. Jackson St., Chicago, ment of water pollution in collaborawill develop a program for the abatetion with the states of that region.

Eugene W. Odbert, Jr., has been appointed director of public works for Portage, Wis. He is a civil engineer graduate of the University of Wisconsin, 1929. After his graduation he did private engineering work in Door County and for five years he was project superintendent for the National Park Service at Devil's Lake state park. Since 1940, he has served as superintendent of construction and maintenance at Sturgeon Bay, Wis.

J. P. Jurrius, hitherto first assistant chief engineer of CPIM, one of the Royal Dutch Shell subsidiaries, is now chief engineer. Having entered the service of the Bataafsche Petroleum Maatschappij at The Hague in 1921, he was sent to Mexico, where he worked in the engineering and pipeline department until November, 1925, when he transferred to the Maracaibo resident engineer section. He remained there until November, 1935, as head of the construction, testing and design section and efficiency department. Except from December, 1946, until August, 1947 at Cardon, Venezuela, where he was in charge of construction of the refinery then being erected, all Mr. Jurrius's service since 1935 has been at Curacao, as chief maintenance engineer and first assistant to the chief engineer. His interest lies in new construction and maintenance, and in roadbuilding and salvage equipment.



On the job of constructing motor vehicle storage buildings at the National Guard armory in Gary, Ind., are, left to right, Herman L. Moor, project engineer, U.S.E.D.; Edward R. Carlson, assistant superintendent C & C Construction Co. Inc., of Fort Wayne, Ind., contractors; and Roy F. Siedenberg, superintendent of the same company. Contract is about half complete and five weeks ahead of schedule.

New officers of the Carolinas Branch of the Associated General Contractors of America, Inc., elected at the 29th annual meeting held in Augusta, Ga., are, left to right: Robert Patten, executive secretary; N. K. Dickerson, Jr., of Monroe, N. C., new president; E. D. Sloan, of Greenville, S. C., retiring president; and H. S. Crain, Durham, N. C., new vice-president.

J. C. Inman is supervising engineer for the Lambeth Construction Co. on excavation work for the $5,000,000 Moses H. Cone Memorial Hospital being built at Greensboro, N. C.

Slater Williams has been appointed a senior civil engineer on the Akron, Ohio, Board of Education architectural staff.

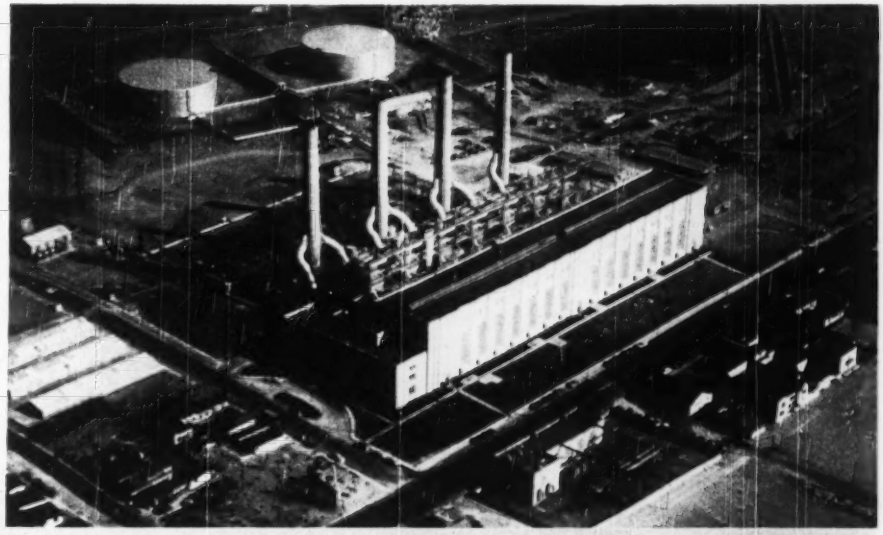
G. M. Crusselle is the new city engineer of Decatur, Ga.

Donald Anderson has been appointed associate planner of the Montgomery County Planning Board at Dayton, Ohio, succeeding **Jack Wood,** resigned. **Charles B. Ford** has resigned as an assistant planner on the board.

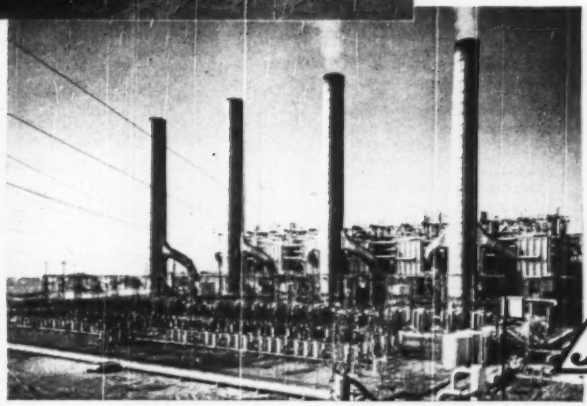
J. J. Rauch, city manager of Greenwood, S. C., for the last two and one-half years, has resigned effective Jan. 1.

R. D. Waterman has been named executive vice-president of E. B. Badger & Sons Co., Boston, Mass., a subsidiary of Stone & Webster, Inc., engineering and construction. Three new vice-presidents are: **A. J. Broggini,** in charge of foreign and domestic sales; **A. J. Connell,** in charge of engineering, drafting, estimating and procurement; **A. J. Good,** in charge of office management, contracts, and engineering and construction cost analysis. Mr. Waterman began with the company in 1939 and has been in charge of all construction. Previously he was with Stone & Webster Engineering Corporation for 25 years.

Sumner C. Willis has resigned as chief of construction of the H. K. Ferguson Co., to go with the Terminal Construction Corp., Woodridge, N. J., as general superintendent on construction of the sewage disposal plant for the Bergen County Sewer Authority at Little Ferry, N. J.



HELPING TO MAKE THE WONDERS *of* SO. CALIFORNIA *more wonderful*



The 280,000 kw Redondo Steam Station was constructed to keep pace with the rapidly growing power demands of this region. Semi-outdoor design combines economy of construction with operating comfort and convenience and the entire structure has been built to resist the stress of possible earthquake shock. Unique is the provision for control of marine growth through thermal shock during periodic reversal of salt water flow in the two 2,000 foot intake and discharge tunnels which obtain condenser circulating water from the Pacific Ocean.

Stone & Webster Engineering Corporation designed and constructed the Redondo Steam Station for Southern California Edison Company.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

NEW HOUSES from OLD

1. Here's your guide to low-cost modernization . . . a book that shows you how to plan and do remodeling work on any type of dwelling. It shows how to go about checking foundation, framework, etc. for structural flaws—how to develop complete plans —how to do the entire job. Over 300 drawings bring you the professional techniques of brick-laying, floor-laying, window construction, etc. Includes methods for quick interior jobs, papering, painting, and linoleum installation. By R. R. Hawkins and C. H. Abbe. 558 pages, $4.95.

Pour Yourself A House

Low Cost Building With Concrete and Stone

2. This manual explains concrete and stone construction methods for building houses, garages and other structures. It takes a floor plan for a house and shows you step by step how each part is erected. Tools, materials and costs are tabulated for each stage, enabling you to make close estimates for similar structures. Two expansion plans for the "basic house", and three other plans for larger dwellings, give you a really workable selection from which you can adapt easily. By F. M. Peters. 217 pages, $3.95.

CONSTRUCTION ESTIMATES AND COSTS

3. Gives step-by-step instructions for estimating construction work of all kinds, including excavations, all parts of buildings, concrete, structural steel and material transportation, profit, overhead, etc. These, combined with useful tables, diagrams and illustrative estimates, make this a complete manual of estimating for the contractor and engineer. Fully revised in line with upward trend of wages and prices — a working guide for the beginner — a key to safer bids, better profits for all estimators. By H. E. Pulver. 653 pages, $6.00.

ELEMENTARY STRUCTURAL ANALYSIS

4. Brings you a simple explanation of the fundamental theories of structural analysis—outlines methods and techniques you can put to use in handling effectively stress problems in many fields. It starts with strength of materials and goes on through statically indeterminate structures, bringing you valuable data on trusses, deflections of structures and influence lines, model analysis of structures, three-dimensional frameworks, cables, etc. By J. B. Wilbur and C. H. Norris. 500 pages, $6.00.

SEE THESE BOOKS 10 DAYS FREE

McGRAW-HILL BOOK CO., 330 W. 42nd St., N.Y.C. 18, N. Y.

Send me book(s) corresponding to numbers encircled below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery, and return unwanted book(s) postpaid. (We pay for delivery if you remit with this coupon; same return privilege.)

1 2 3 4

Name .....

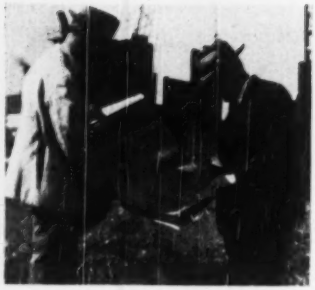
Address .....

City ..... Zone ..... State .....

Company .....

Position ..... NR 1-5-50

This offer applies to U. S. only



E. W. Ellis, special bridge engineer of the Georgia State Highway Department, holds plans of the new multi-million-dollar Turtle River bridge near Brunswick, Ga., for B. P. McWhorter, division engineer of Public Roads Administration, to check some details. (Photo H. L. Chamberlain)

E. Boris Stahm, planning engineer for San Mateo, Calif., since 1947, will take the newly-created position of planning director of Fresno, Calif. A graduate of Columbia University, where he received a master's degree in city planning and housing, and of the Illinois Institute of Technology, from which he obtained a degree in architecture, Mr. Stahm served 7 years with the San Diego City Planning Commission. He also was employed by Los Angeles in airport planning and designing, and he did general planning for Santa Catalina Island.

H. M. Witbeck, deputy city engineer of Palo Alto, Calif., has been appointed director of the community's municipally owned utilities.

Mayor Ross Lawhon of North Little Rock, Ark., has announced the appointment of **Glenn Douglass** as city engineer.

T. M. Wardell, city manager and city engineer of Rhinelander, Wis., has resigned and will become village manager of Hinsdale, Ill.

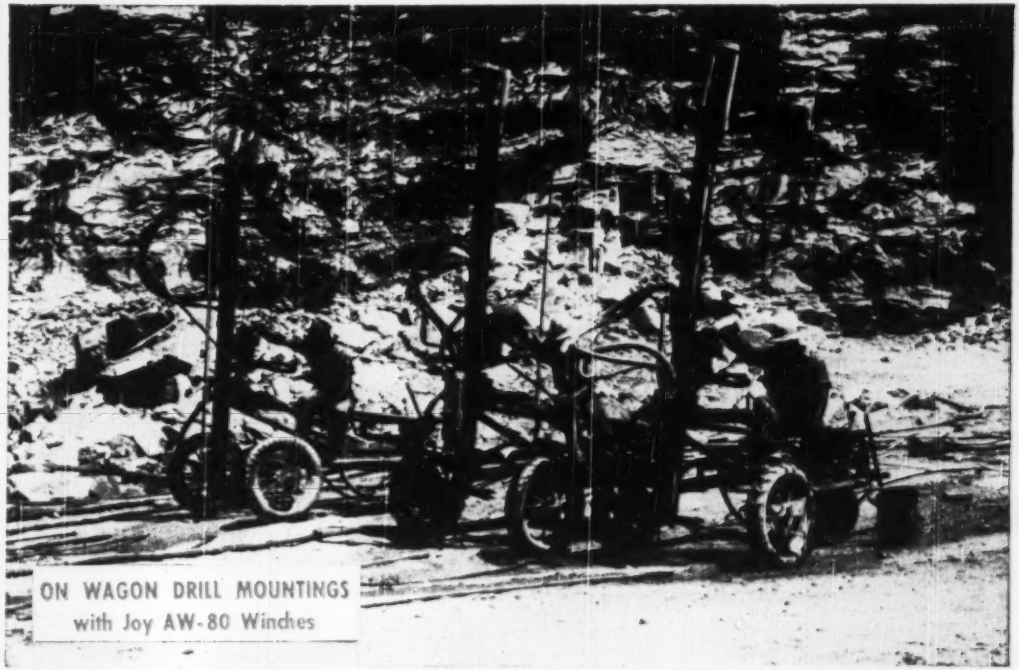
George W. Moore, Rochester, N. Y., district sanitary engineer for more than 13 years, has resigned to go with the central office of the New York State Health Department in Albany. Succeeding Mr. Moore will be **John C. Haberer** of Utica. Mr. Moore was graduated from Pennsylvania State College in 1924 and worked for the Pennsylvania Health Department for 11 years before going to Rochester.

Horace V. Hubbell of Hot Springs, S. D., Bureau of Reclamation project engineer for Angostura Dam of the Missouri River Basin Project, is retiring after more than 36 years. A graduate of Colorado State College with degrees in civil and irrigation engineering, he joined the bureau in 1913 as an inspector on the Shoshone Reclamation Project at Powell, Wyo. Later he was made assistant engineer.

Col. A. G. Kirchhoff has been appointed executive officer for the division engineer for the South Atlantic Division of the Corps of Engineers, Atlanta, Ga. He succeeds Col. Ben Washington. Kirchhoff is a graduate of West Point, 1926, and has served in all parts of the world. He was recently Chief of the Engineering Branch of the Eighth Army in Japan.

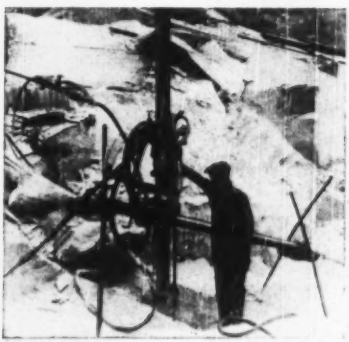
Lowell J. Stephenson has joined the staff of the Newark office of O. J. Porter & Co. to act as construction engineer on the projected New Jersey Turnpike. The Porter Company along with Edwards and Kelsey and Frederic R. Harris, Inc., are joint venturers on the engineering work for one of the sections of the highway. For the last three and one-half years Commander Stephenson was contract superintendent and project manager for the Civil Engineer Corps of the Navy, San Francisco Naval Shipyard.

Lt. Col. William John Penly of Camp Hood, Tex., has been named new officer-in-charge of the Fort Worth Sub-Office of the Corps of Engineers, succeeding James A. Cotton. He is a graduate of the Iowa State College. A veteran of the Pacific war, he saw action in New Caledonia and Guadalcanal. As head of the Fort Worth Sub-Office, Col. Penly will supervise the construction of Benbrook, Lavon, Grapevine and Garza-Little Elm Reservoirs which the Galveston District of the Corps of Engineers is now constructing in the Dallas-Fort Worth area. He will also direct construction of a military housing project now being built at Carswell Air Force Base near Fort Worth.



ON WAGON DRILL MOUNTINGS
with Joy AW-80 Winches

Put JOY SILVER STREAK DRIFTERS TO WORK ON YOUR JOB—



ON QUARRY-BAR MOUNTING

Watch daily footage INCREASE and costs per foot go DOWN!

JOY Silver Streak Drifters feature the exclusive *Dual Valve* with positive cushion control. It gives a harder, more powerful punch—literally makes air do more work. What's more, JOY Drifters *last longer*—give you more feet of hole with less maintenance. Exclusive *cadmium plating*, inside and out, inhibits rust, prevents scoring during run-in, and at the same time, adds power by permitting closer piston tolerances. ● Ask for a trial demonstration on JOY Drifters—the T-300, T-350 or T-400—*prove their all-around superiority right on the job!*

Write for Bulletin, or

Consult a Joy Engineer

W&D R 2818

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

Dig and dump . . . speed the cycle . . . take those shocks . . . *stay on the job*—that's the big order you give a hoist rope. To have it filled, put *Preformed* Yellow Strand Hoist Rope on your power shovel. Specify Lang Lay with Independent Wire Rope Core—6 x 19 for ropes up to and including 1" in diameter, 6 x 41 for sizes 1⅛" and larger.

In *Preformed* Yellow Strand, whatever the construction, internal stresses have been relaxed. You gain with longer rope life, fewer shutdowns for replacement, more production for your rope dollar. Call your B & B distributor now so you'll have a real *working* rope on hand when it's time to change your hoist, drag, scraper or other heavy-duty line.

Broderick & Bascom Rope Co., St. Louis 15, Mo.

Branches: New York, Chicago, Houston, Los Angeles, Portland, Seattle

Factories: St. Louis, Peoria, Houston, Seattle

BRODERICK & BASCOM

Yellow Strand

PREFORMED WIRE ROPE

Col. Robert G. West, assistant division engineer of The Ohio River Division, U. S. Corps of Engineers, served as host on a recent river inspection trip made by The Ohio River Valley Water Sanitation Commission. Colonel West is a member of the board for the Army Engineers.

Herbert W. Stevens, of the planning division of the Tennessee Valley Authority, has been appointed director of city planning at Raleigh, N. C.

Rufus C. Phillips, Jr., president of Airways Engineering Corp., has recently been appointed chairman of the airport committee of Washington, D. C. Board of Trade.

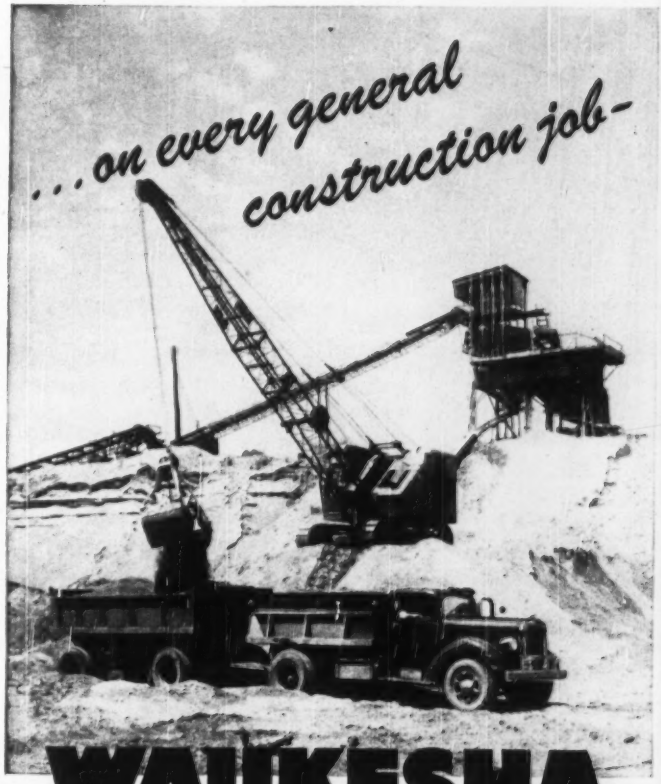
James L. Frink, head of the engineering department of Burlington Mills Corp., Greensboro, N. C., since 1947 and prior to that city manager of Greensboro, has been elected a vice-president of the company. He was educated in Missouri and had a long career with the Army before retiring to become Greensboro's city manager.

John T. Marshall, district engineer for Georgia, U. S. Bureau of Public Roads, since 1924, has retired after 40 years of federal service. He is a civil engineering graduate of Virginia Polytechnic institute.

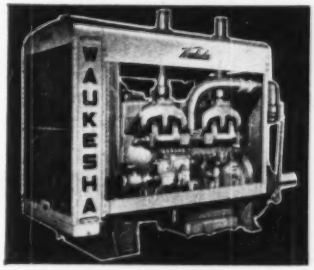
F. C. Wood, town engineer of Dalhousie, N. B., has been named works commissioner, of Halifax, N. S. He had made a survey of the works department.

Sanford K. Fosholt has become chief engineer of the Stanley Engineering Co., Muscatine, Iowa, and **Frank M. Swengel** is head of the mechanical section.

Edwin R. Schofield, former principal assistant engineer, Bureau of Engineering Surveys and Zoning, Philadelphia, Pa., has joined Knappen Tippetts Abbett Engineering Co., New York, in charge of its Philadelphia office.



WAUKESHA
Diesel
POWER UNITS

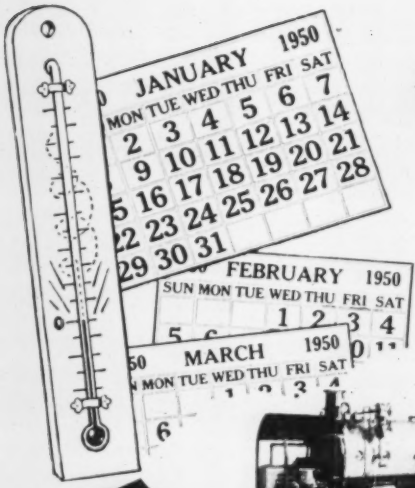


WAUKESHA Super-Duty DIESEL (6 WAKDU) six cylinders, 6¼-in. x 6½ in., 1197 cu. in. displacement, 210 hp. maximum

WHY are Waukesha Diesels so specially adapted to the general contractor's needs—for powering rock crushing, gravel screening-washing machinery, conveyors, shovels, cranes, pumps, mixers, pavers, hoists, and portable compressors and generators . . .

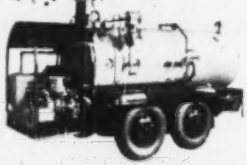
Outstandingly lively pick-up . . . quick response to power demand . . . high economy . . . ability to burn cleanly all modern "high speed Diesel fuels" of 45 cetane or above . . . starts easily . . . runs smoothly . . . maintenance is simpler and costs less . . . and Waukesha Diesels are easy to understand and operate. They range all the way from the small four-cylinder with a maximum of 29 hp., to the largest six-cylinder with its 357 hp. maximum. Bulletin 1418 tells you how Waukesha builds dependability into these Diesels—send for it.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES


JANUARY 1950
MON TUE WED THU FRI SAT
2 3 4 5 6 7
9 10 11 12 13 14
16 17 18 19 20 21
23 24 25 26 27 28
29 30 31
FEBRUARY 1950
SUN MON TUE WED THU FRI SAT
1 2 3 4
MARCH 1950
MON TUE WED THU FRI SAT

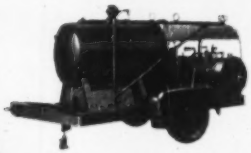
WINTER WORK PAYS

WITH CLEAVER-BROOKS EQUIPMENT FOR COLD WEATHER CONSTRUCTION AND MAINTENANCE



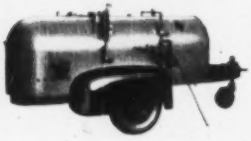
MOBILE STEAM PLANTS

Completely self-contained; portable; highly efficient; fully automatic, code constructed, weather protected; available as skid mounted unit for your truck or trailer. Ideal for pile driving and extracting — 80 to 150 hp, oil or gas fired.



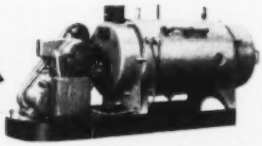
PORTABLE PUMPING BOOSTERS

Heats bituminous material 4 times as fast; No. 1 booster — 10,000 gallon car 35° to 45° per hour, No. 2 booster — 10,000 gallon car, 55° to 60° per hour. Available as skid, two wheel or four wheel trailer mounted unit.



PORTABLE TANK CAR HEATERS

Fast steaming; 20 minutes from cold water start to 125 pounds steam pressure. Boiler feed pump, gas engine, oil burner, fuel and water tanks are all mounted on a single frame. 2 car heater — 28 hp; 3 car heater — 42 hp.



HOT WATER GENERATORS

A fast, instantaneous hot water producer requiring no storage tank up to rated output; fully automatic, code constructed, insulated. Two sizes — 665 gph, 100° F. rise and 875 gph, 100° F. rise.

Despite cold and wet weather, construction and maintenance work must go on.

Cleaver-Brooks equipment provides steam, heat, or hot water — fast, efficiently, and at low cost — for a wide range of cold weather needs such as —

- Steam for cleaning machinery, thawing frozen ground, culvert and catch basin thawing, operating steam hammers and pile driving, heating buildings and offices, and other uses.
- Heating and transferring asphalt, road oils, bituminous materials in tank cars and storage tanks.
- Thawing and heating aggregate in stock piles or bins for winter concreting.
- Heating water for central mixing plants, concrete block plants, or any large volume hot water needs.

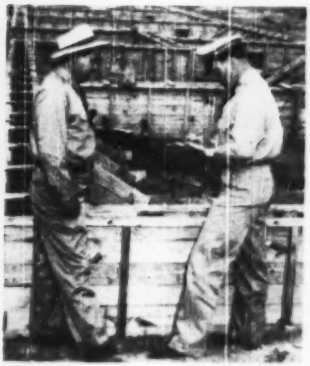
Write for bulletins and complete information on the entire line of Cleaver-Brooks equipment for cold weather construction and maintenance.

Cleaver-Brooks

CLEAVER-BROOKS COMPANY
389 East Keefe Avenue
Milwaukee 12, Wisconsin

BUILDERS OF EQUIPMENT FOR THE GENERATION AND UTILIZATION OF HEAT.

After more than 25 years with the East Bay Municipal Utility District, California, and for the last 15 years as chief engineer and general manager, John S. Longwell is retiring. A graduate of Cornell, Longwell was with the U. S. Reclamation Service from 1910 to 1924 and joined the Utility District in the latter year. He served as division engineer on the location and construction of the pipe line section of the First Mokelumne Aqueduct, and some time later was in charge of the construction of the local Sequoia and Wildcat aqueducts.

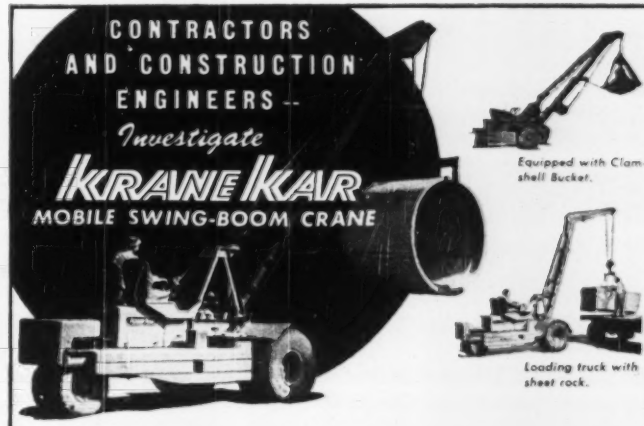


Ground was recently broken for the construction of 136 apartments for noncommissioned officers at Carswell Air Force Base, near Fort Worth, Tex. Pictured are Arthur F. Brown, resident engineer, left, and Maj. James H. Boykin, right, who are supervising the construction for the Galveston District of the Corps of Engineers. The project will consist of the construction of seventeen buildings each containing eight apartment units, for which the Corps of Engineers has recently awarded a $1,357,499 contract to the McCann Construction Co., Fort Worth.

CONTRACTORS AND CONSTRUCTION ENGINEERS — *Investigate*

KRANE KAR

MOBILE SWING-BOOM CRANE



Equipped with Clamshell Bucket.

Loading truck with sheet rock.

ECONOMIZE by letting ***KRANE KAR*** expedite work in your shop, yard, and on project site. This lively swing-boom crane dismantles and assembles machinery; loads and unloads vehicles; carries and places lumber, steel, stone, pipe, concrete forms, compressors, pumps, etc. ***KRANE KAR*** will quickly repay its own cost . . . in savings you need to compete and to complete present jobs at a profit. 1½, 2½, 5, and 10 ton capacity.

Our sales-engineer will be glad to advise you. Write for Bull. 54.

SILENT HOIST & CRANE CO. 858 63rd ST., BROOKLYN 20, N.Y.

The outstanding demolition tool of today

NEW! **CLECO**

RC-80 AIR-OPERATED

PAVING BREAKER

Hits harder—hits faster—has less recoil—produces more work per man hour—costs less to maintain.

A new Cleco valve — the heart of the RC-80 — reduces recoil and gives greatly increased impact and faster action.

Powerful piston action and perfect balance give a breaker with maximum penetrating ability. Reed "know how" has combined rugged construction and special alloy steels to assure maximum production with minimum maintenance.

Contractors report: ". . . greater output per man-hour" . . . "eliminates four o'clock fatigue" . . . "these breakers are the finest we have ever used."

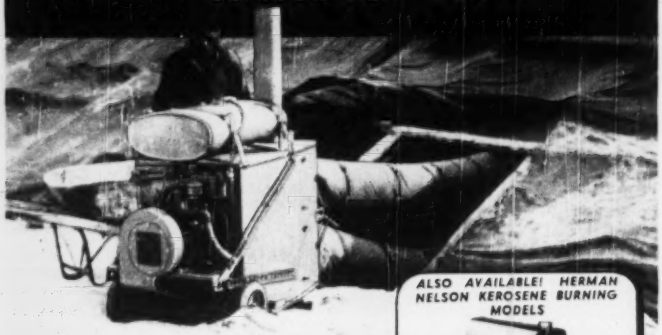
Write for Bulletin RC-969 . . . or better yet, call your Cleco representative today for demonstration.

CLECO DIVISION

of the REED ROLLER BIT CO.

P. O. Box 2119 Houston 1, Texas

Higher Labor Efficiency!
LOWER JOB COSTS!



with the HERMAN NELSON Standard Model Portable Heater

(Completely Self-Contained and Self-Powered)

- Gasoline Engine Powered — uses gasoline for heating fuel.
- Provides Quick, Clean, Safe Heat — without smoke, soot or open flame!
- Abundant Fresh, Heated Air — forced to areas where most needed!
- Full 250,000 BTU per hour capacity — enough to heat three ordinary five-room houses — yet no bigger than a kitchen stove!
- Lowers winter job costs by eliminating cold weather shut-downs!
- Can be used for countless applications requiring a portable, self-contained heating unit.

ALSO AVAILABLE! HERMAN NELSON KEROSENE BURNING MODELS

HERMAN NELSON DE LUXE MODEL PORTABLE HEATER with Automatic Temperature Control. Easily operated — set thermostat just like in your own home! Electric Motor Powered — Automatic Ignition — 250,000 BTU per hour.

HERMAN NELSON ECONOMY MODEL PORTABLE HEATER — Low priced, small, compact — ideal for smaller jobs. Electric Motor Powered — 125,000 BTU per hour.

Write for information about temporary or semi-permanent heating.

THE HERMAN NELSON CORPORATION MOLINE ILLINOIS

SINCE 1906 MANUFACTURERS OF QUALITY HEATING & VENTILATING PRODUCTS

MacArthur

39 YEARS INSTALLING PILES OF EVERY TYPE

CAST-IN-PLACE CONCRETE COMPOSITE
STEEL SECTIONAL PIPE TIMBER

SOIL AND ROCK EXPLORATION

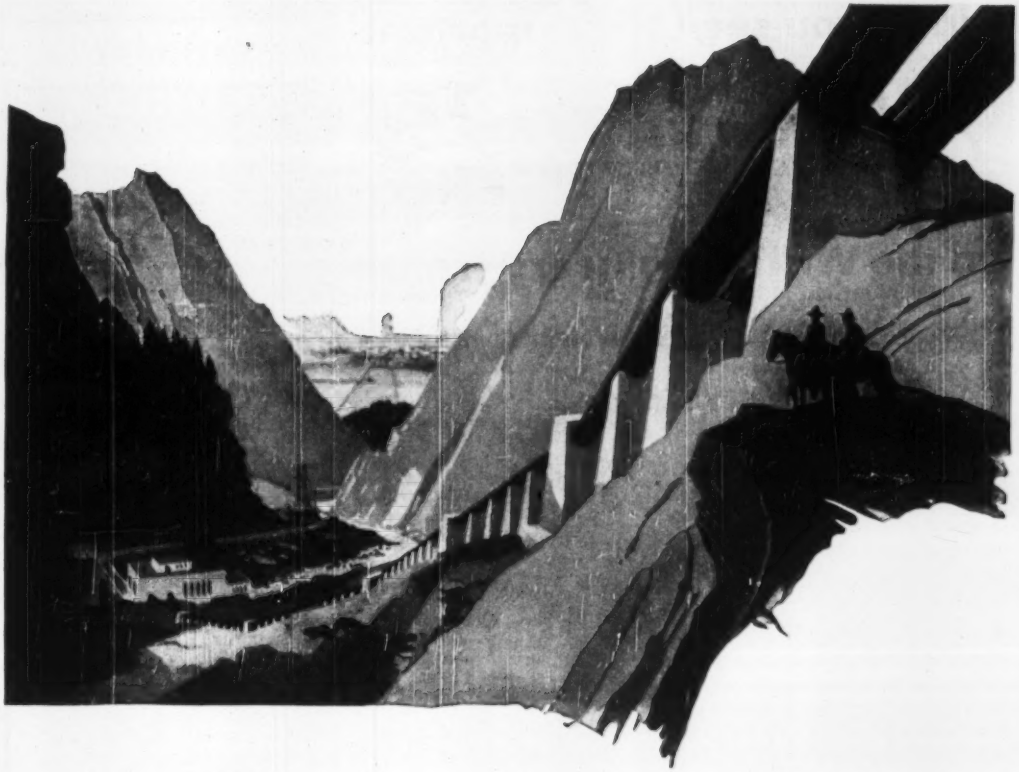
MacARTHUR CONCRETE PILE CORPORATION

18 EAST 48th STREET, NEW YORK 17, N. Y.

BOSTON • CINCINNATI • NEW ORLEANS

L. F. Wylie has been named construction engineer for the Bureau of Reclamation's San Luis Valley Project in Colorado, succeeding the late Ernest Puckett. Mr. Wylie will supervise construction of Platoro Dam, on the Conejos River, designed to impound 60,000 ac-ft. of water and regulate the flow of the Conejos River to supply irrigated lands. He is a graduate of the University of New Mexico's school of engineering. He joined the Reclamation staff in 1932 and served until 1935 as assistant engineer at Hoover Dam. From 1935 to 1940 he was associate engineer on the All American Canal and thence transferred to the Bureau's Gila Project in Arizona. He later joined the U. S. Marine Corps.

Engaged in building Conemaugh Dam, near Tunnelton, Pa., are, left to right, R. B. Jenkinson, resident engineer, Corps of Engineers; H. A. Hart, quarry superintendent, Latrobe Construction Co., aggregate producers; and F. S. Schmid, assistant project engineer, Corps of Engineers.



SMITH Impulse Turbines

Impulse runner of solid-cast design, an exclusive SMITH advantage.

FOR HIGH HEADS, and wherever the head and water quantities available prohibit the use of reaction-type machines. Ideal for installations in remote localities because of the ease with which the completed unit may be transported. The simplicity of design, facility of operation and greater dependability remove the necessity of skilled operators and attendants. Smith's solid-cast runner design provides the additional advantages of closer spacing of buckets resulting in increased speed and consequently, a decrease in the size of the turbine unit, as well as the generator. Write for your copy of our Bulletin — "Impulse Turbines by SMITH!"

S. MORGAN SMITH COMPANY

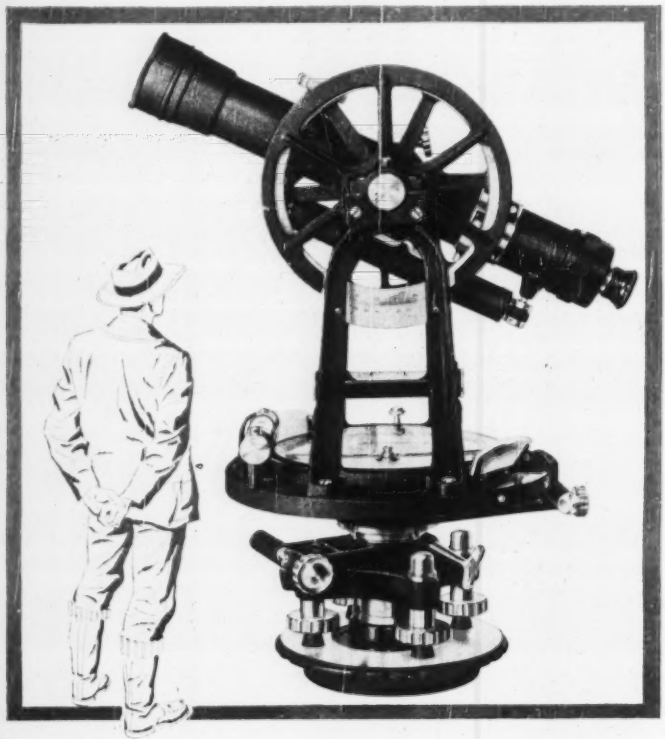
YORK, PENNSYLVANIA

POWER by SMITH

Have you seen the important

NEW FEATURES

on the WHITE Engineers' transit



YES, the White Engineers' Transit is a fine engineer's instrument — now made even finer with the addition of *covered leveling screws* and *coated optics*.

Covered leveling screws assure you of smooth, easy, precise leveling at all times, under all kinds of conditions for the life of the instrument itself.

Coated optics guarantee clear, sharp, accurate images — without halation, at longer distances, even under adverse conditions.

Compare the David White Engineers' Transit with all others—feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

Contact our nearest dealer for complete details of the David White Engineers' Transit and for other fine Engineering Instruments— or write direct to David White, 515 W. Court St., Milwaukee, Wis.

DAVID WHITE COMPANY

We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

OBITUARY

O. Alexander Mechlin, 68, engineer and builder of many government structures, died Dec. 15 at Portland, Ore. A 1905 graduate of Dartmouth college, he was appointed professor of civil engineering at George Washington university in 1905, and also served as assistant engineer of bridges in the District of Columbia. About 1910 he established his own engineering firm and was engaged in many important projects in and around Washington. During World War I, he joined the Navy Engineer Corps and was promoted to commander and had charge of erecting the wireless tower at Annapolis, the giant crane at the Philadelphia Navy Yard, the Zeppelin and airplane hangar at Lakehurst, N. J., and the munitions and Navy buildings on Constitution Avenue in Washington. Subsequently he was with various engineering and contracting firms and in World War II had charge of most of the dry docks on the Pacific coast. He left Washington nine years ago to make his home in Portland.

Nelson G. Layman, a bridge engineer who received the Army's highest civilian award for his work in the China-Burma-India theater in the war, died Dec. 13 at Cheverly, Md. A civil engineering graduate of St. John's College, he served in the first world war with the Army Engineers in France and later with the Army of Occupation in Germany. He had been in the Army's office of the Chief of Engineers for the last six years as a specialist on bridge erection and demolition. He was assistant Highway Engineer for Arkansas before going to Washington.

John G. H. Eyre, 55, a civil engineer, of Haddon Heights, N. J., died Dec. 3 at Philadelphia. He attended the Drexel Institute of Technology, and was with the New Jersey State Highway Department for 30 years.

Jacob B. Oligschlager, 85, concrete construction authority in Louisville, Ky., for many years, died Nov. 25.

Lawrence A. Schultz, 74, supervisor of the New York State Public Works Department, died Nov. 24 at his home in Albany.

Wm. F. Kucharo, 64, head of the Kucharo Construction Co., Des Moines, Iowa, died at Rochester, Minn., Dec. 12. His firm has the contract for the $5,000,000 Iowa state office building.

CHECK YOUR REQUIREMENTS

with these advantages of REINFORCED CONCRETE CYLINDER PIPE for main water transmission lines

Here are 9 ways this outstanding pipe helps reduce the cost of delivered water...

1. Combines the physical strength and characteristics of steel with protective features and permanency of well-made concrete.

2. Under normal bedding and backfill conditions, will successfully withstand external or trench loads up to 10 ft. of cover. Greater loads are safely provided for by compacted backfill or cradling.

3. Has ample strength for the occasional concentrated loading which is sometimes met in practice.

4. Will remain water tight under conditions of foundation settlement or soil movement within the limits generally met in water works practice.

5. Has a long life with freedom from corrosion or deterioration. Concrete encasement protects steel cylinder and reinforcement from electrolytic action and deleterious ground water.

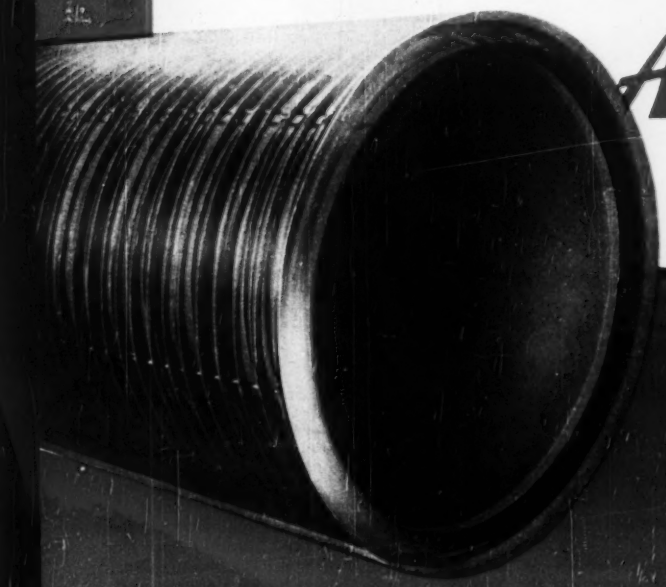
6. Conservative design basis and assumed unit stress of this class of pipe allow ample factor of safety for all normal conditions of service including surge and water hammer.

7. In event of earthquake, sudden or extreme increases of pressure, or other disturbances, pipe will neither burst, shatter, nor discharge its full flow of water.

8. If surges beyond design operating limit, or other extraordinary pressures cause cracks to open up in concrete lining or encasement, they will close and seal after these heavy pressures have been relieved, wherever elastic limit of steel has not been exceeded.

9. Rugged construction provides ample strength to withstand all normal handling conditions.

The economies of Reinforced Concrete Cylinder Pipe are reflected in initial cost, ease of installation, sustained capacity, and trouble-free service. All of these factors mean substantial savings in the cost of delivered water. Complete information is available upon request.



American
PIPE AND CONSTRUCTION CO.

CONCRETE PIPE FOR MAIN WATER SUPPLY LINES, STORM & SANITARY SEWERS, SUBAQUEOUS PIPE LINES

P.O. Box 3428, Terminal Annex, Los Angeles 54, Calif.

Main Offices and Plant—4635 Firestone Boulevard, South Gate, California • District Sales Offices and Plants—Oakland—San Diego—Portland, Oregon

COMBINES strength of STEEL with permanency of CONCRETE

Pipeline view shows four steel cylinder and reinforcement cages are covered in concrete wall of 27" Lock Joint Cylinder Pipe, concrete encased, some 47,000 feet of which are now being manufactured and installed in Unit 1 of the Franklin-Haiwee Trunk Line of the City of Los Angeles, Dept. of Water and Power.

EDUCATION and RESEARCH

Soil sampling device

Prof. F. H. Kellogg, chairman of the department of civil engineering at the University of Mississippi, has devised a $200 portable soil sampling device that performs many of the functions of larger $3,000 drilling rigs. Assembled in the school's machine shop, the new device will obtain undisturbed soil samples to a depth of 35 ft. in all but the hardest ground, Mr. Kellogg says.

Disassembled, the new rig can be carried in a car trunk and can be operated by one engineer and a helper. The new device uses a cheaper waxpaper cylinder for taking the soil sample rather than the brass cylinder used in larger rigs.

Experimental sidewalk

The civil engineering department at Northeastern University, Boston, Mass., under Prof. E. A. Gramstorff, wants some severe freezing weather this winter to freeze their experimental sidewalk, 120 ft long and 4 ft wide. A "freeze and thaw" cycle is needed to test 117 blocks of different concrete that form the sidewalk. No two blocks in the sidewalk are alike in composition.

The purpose is to determine the optimum mix of concrete for paving purposes and to test the efficacy of curing and of air entraining agents.

Assistant Prof. Ernest L. Spencer says, "Some of the blocks have a lot of cement, and some little. Some are cured with wax preparations and others covered for a time with wet burlap. Several have asphalt in them. When the bad mixtures break down, we will experiment with others until we get what we want."

Interior experimental work is in the department's temperature-and-humidity controlled laboratory where samples of varying sizes are placed in galvanized iron boxes in a 10 percent solution of salt and put in a deep freeze for 24 hours. (600 lb. of concrete are frozen every night in a deep freezer with a 13 cu. ft. capacity). Then the samples thaw for 24 hours. Sonic modulus and weight loss measurements are periodically made throughout the freeze-thaw process.

Road building methods

Latest developments in road building will be emphasized at the third annual Northwest Conference on Road Building, in Moore Hall on the University of Washington campus, Seattle, Feb. 6-8.

More than 300 engineers from the Northwest, British Columbia and Alaska are expected. The meeting is co-sponsored by the department of civil engineering and the student chapter of the American Roadbuilder's Association.

Featured at the sessions will be the design of expressways, subgrade exploration, frost heave damage, and pavement design. Main speakers will be Joseph Barnett, chief of the Division of Urban Design of the Bureau of Public Roads, Washington, D. C.; and Prof. K. B. Woods, director of the Joint Highway Research Project, Purdue University.

Other speakers include: William A. Bugge, director, Washington State Highway Department; Neil McKay, R. P. Newland and Lloyd Morgan, of the same department; Homer Hadley and Joseph Holt, Seattle engineers; W. R. Bond, Portland, Ore., Francis N. Hveem, California Department of Highways; W. H. Landaas, Association of General Contractors; and Prof. Richard H. Meese, instructor in civil engineering.

Educational Notes

Big Gift for Texas—Formal transfer of 17,000 acres and 433 buildings on the former Pan-Tex ordnance plant area near Amarillo has been made to Texas Technological College by the General Services Administration. The property, valued at $23,000,000, will cost the college nothing. The farm will continue to be used as an agricultural experiment station on a self-sustaining basis.

Research Grant—The department of civil engineering of Columbia University has received a $7,000 grant from the Research Corporation for a research program dealing with the fundamental aspects of mechanical behavior and properties of engineering materials. The investigation will be directed by Prof. A. M. Freudenthal.

Expansion Program—Francis S. Frill, Philadelphia, Pa., engineer, is vice-president of the general expansion program of the Drexel Institute of Technology. Ground has been broken for the alumni scientific laboratories building which will house the civil and other engineering departments.

Construction Materials—As part of the graduate program of the Newark, N. J., College of Engineering, a coordinated course on materials of engineering construction will be given by Charles L. Mantell, with the help of outside lecturers and specialists in that field.

Trucking Road Damage—Vernon L. Glover, assistant state highway engineer has been appointed the Illinois member of a 5-state committee to conduct a research project on the extent of damage caused by heavy commercial trucking on state highway systems. Uniformity is sought in interstate laws as to size and weight of trucks.

Evening Courses—Among the evening courses to be offered by the N. Y. State Institute of Applied Arts and Sciences, Brooklyn, N. Y. City, beginning Feb. 6, are courses on building codes, estimating, structural theory and design, plan reading, and structural detailing.

Faculty Notes

Harvey F. Ludwig, Los Angeles consulting engineer, has been appointed an associate professor in the department of civil engineering at the University of California, Berkeley. His field will include courses in sewage and water supply engineering and sanitary design, and he will also conduct seminars and research. He is a graduate of the University of California and has served on the staff of the Orange County Sanitation Districts. Erman E. Pearson has been appointed an assistant professor of sanitary engineering and hydraulics. He is a graduate of the Massachusetts Institute of Technology. Another M.I.T. graduate, Ray W. Clough, also an assistant professor in the engineering department, works in the laboratories for testing engineering materials. Other recently appointed civil engineering staff members are Alexander A. Scordelis and Wells A. Hutchins.

Albert F. Bush has been appointed assistant professor in the department of engineering at the University of California, Los Angeles. He will conduct a new undergraduate course in industrial sanitation along with graduate seminars and research which, together with present courses, will be a nucleus for future study courses in industrial safety and sanitary engineering. A graduate of Stanford University, with a M. Sc. in engineering and public health from Harvard in 1947, Mr. Bush has been industrial hygiene engineer for the California State Department of Public Health since 1942. During the war he was a sanitary engineer with the U. S. Army.

Hypoid gear teeth surfaces are exposed to severe sliding and rubbing action, as well as pressure. They require a powerful, extreme-pressure lubricant. Protect hypoid gears with finest Quaker State Super Quadrolube, especially designed for this heavy-duty purpose.

Quaker State makes not one, but several different grades and types of lubricants, each designed for a particular purpose, all of outstanding quality.

Quaker State Super Quadrolube

Quaker State Viscous Lubricant

Quaker State Wheel Bearing Lubricant

Quaker State Superfine Lubricants

You can use each of these specialized lubricants profitably in your equipment.

Quaker State Quadrolube

Quaker State Waterproof Lubricant

Quaker State Universal Joint Lubricant

Quaker State EXPP2 Lubricant

NO OTHER MIDDLEWEIGHT

JACKHAMER

OFFERS YOU ALL OF THESE

HEAVY-DUTY FEATURES

A DOUBLE-KICKER PORT VALVE that allows full air pressure on the piston for a longer period of time, resulting in more powerful blows and stronger rotation.

AN IMPROVED BLOWING ACTION that puts air at full line pressure directly into the chuck cavity for better hole blowing.

A THREE-IN-ONE BACKHEAD that permits a quick changeover to wet, dry or blower type drilling.

A BRONZE CHUCK-NUT that cuts replacement costs and prolongs piston life.

A BUSHED PISTON-STEM BEARING that reduces piston wear, lowers maintenance costs and maintains an air cushion at the front end of the drill.

THE J-40

The Jackhamer designed with the Carset Jackbit in mind

These features, plus light weight and easy holding, make the J-40 the most powerful — and the most **versatile** Jackhamer in its class. It's light enough for the widest range of general work, and powerful enough to handle many of your BIG jobs, too. Ask your nearest I-R office for a demonstration.

CARSET JACKBIT

SET WITH CARBOLOY INSERTS

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 413-5

ROCK DRILLS • COMPRESSORS • AIR TOOLS • DIESEL AND GAS ENGINES • CENTRIFUGAL PUMPS • VACUUM EQUIPMENT

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
February Materials and Labor Prices will appear in the February 9, 1950 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots incl. $1.00 per bbl. for bags, cash. dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, per 5O c.y., del.
	Cloth	Paper	Bulk	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand gray	Lt. wgt. agg.	
Atlanta	$4.16	$3.41	$3.10	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.1725	$0.1725	$11.00
Baltimore		3.39	3.14	2.40‡a	2.40‡a	1.95‡a	2.60‡c	2.70‡a	2.45‡a	2.45‡a	.16	.16a	10.25
Birmingham	3.75	3.00		2.06	2.06	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston	4.47	3.67	3.41	2.50a	2.50a	2.50a	1.60a	1.70a			.196	.205a	10.45A
Chicago	3.63/3.69	2.82/2.89	2.58/2.64	2.75‡b	2.75‡b	3.20‡b	2.75‡i	2.75‡b	2.00‡	2.00‡	.20	.20b	....
Cincinnati	4.14	3.34	3.08	1.75‡e	1.75‡e	1.85‡e	2.00‡k	2.00‡k	1.50	1.50	.85	.205	11.65d
Cleveland	3.83	3.03	2.75	1.90cf	1.65f	1.55	3.55‡a	3.55‡a	2.75	2.75	....	.21	11.80i
Dallas	3.57	2.82	2.52	2.00	2.15	1.75	2.10	2.15	....	....	.089e	.125	9.30
Denver	....	3.54	3.29	1.85	2.00	1.15	....	....	....	....	.20	.23a	9.65
Detroit	....	2.98	2.71	3.25‡b	3.25	3.00‡b	2.75/3.00‡	2.75/3.00‡	3.00‡	3.00‡	.185	.18a	9.65f
Kansas City	3.91	3.16	2.85	1.95	1.95	1.30	1.45d	1.45d	....	....	.15ag	.17eh	10.40b
Los Angeles		3.72a	3.32a	1.94‡a	2.04‡a	1.74‡a	1.92‡a	1.92‡a	....	....	.12f	.22	9.70bk
Minneapolis	4.13cd**	3.37cd	3.07cd	2.40‡ag	2.40‡ag	1.45‡ag	2.50‡ag	2.50‡ag	....	....	.21e	....	10.90f¢
Montreal	....	2.46ac	2.31ac	....	2.40bc	2.00bc	1.30cj	1.60cj	....	....	.22	.20e	9.05ek
New Orleans	....	2.90e	2.65e	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.40
New York	4.29	3.49	3.24	2.00bk	2.00bk	1.45bk	2.25bl	2.25bl	....	....	....	....	10.50a
Philadelphia	3.93	4.23‡	3.13/3.43‡	2.87	3.17‡	2.45‡	1.90‡	1.95‡	1.50	1.50	.18/.22	....	10.80
Pittsburgh	3.90	3.18		2.05‡	2.05‡	2.00‡	2.50‡	2.50‡	2.05	2.05	.21d	.21d	10.85
St. Louis	3.74/3.80b	2.94/3.05b	2.75b	2.40/2.60‡am		2.40‡am	2.00/2.40‡am		1.60b	1.60b	1.15	1.15	.215	.54cj	10.40
San Francisco	....	3.39	2.99f	1.84	1.84	1.84	1.94	1.94	....	....	....	....	.25c	10.75
Seattle	....	3.55a	3.05a	2.75‡bm	2.75‡bm	2.75‡bm	3.50‡bm	3.50‡bm	....	....	.22f	.31/.35	....	9.75j

‡ Delivered. * Prices incl. dealers comm. except as noted. CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* C.L. price dealers' comm. not incl. *d* Dealers sell only L.C.L. *e* Plus switching charges. ** May be discontinued after Jan. 1. SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ¾". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson River. *m* Less 2% for cash.

CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 3½ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *h* F.o.b. plant. *i* Less 2% for cash. *j* Less L.C. for cash.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10-100 cu. brackets. *d* Truck loads up to 500 cu. yds. *e* 2,000 lb. coner. *f* 2500 lb. comp. *g* Aver. haul 7-9 mi. none. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included 1:2½:4.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month on carload deliveries, no trucking, same as dealer cash discount 10c, per bbl. for payment within 15 days of date of invoice. Subject discount 10c, per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 25¢ per bbl.; not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.40†	Buffington, Ind.	$2.30	Steelton, Minn.	$2.40	Muskegon, Mich.	$2.50†	Toledo, O.	$2.40†
Clinchfield, Ga.	2.40†	Independence, Kan.	2.30	Leeds, Ala.	2.25	Saginaw, Mich.	2.35†	Milwaukee, Wis.	2.50†
Kingsport, Tenn.	2.40†	Hannibal, Mo.	2.35	Duluth, Minn.	2.40	Wyandotte, Mich.	2.40†	Green Bay, Wis.	2.50†
West Des Moines, Iowa	2.45†	Northampton, Pa.	2.40	Hudson, N. Y.	2.40	Buffalo, N. Y.	2.40†	Ironton, O.	2.30
Nazareth, Pa.	2.40†	Universal, Pa.	2.40	Alpena, Mich.	2.25†	Oswego, N. Y.	2.60†	Montreal City	2.13
Bath, Pa.	2.40†	Waco, Tex. (+ 9¢ tax)	2.20	Detroit, Mich.	2.40†	Cleveland, O.	2.40†	W. Winfield, Pa.	2.40†

‡ *Prices to hold for first quarter of* 1950

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M carload lots 3x4x8½ in.	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	....	....	....	....	....	....	....	....	....
Baltimore	150.00‡	57.70‡	....	$22.00	....	$.09	$0.145	$.09	$.165	$.09c	$.09	$0.11
Birmingham	....	32.50	....	....	....	....	....	....	....	....	....	....
Boston	....	....	....	24.50a	$35.50a	.1036a	.185a	.115a/c	.205a/c	.10a	.113a	.205a
Chicago	155.00‡a	85.00/88.00‡b	2.70/3.50‡f	20.25b	30.25b	19.25b/c	29.25b/c	.0875b/c	.16b/c	.075b	.1025/.1075b	.15/.1075b
Cincinnati	....	....	....	19.00k	....	.085	.0890	.085a/c	....	....	....	....
Cleveland	....	49.00‡	3.43g	25.00	35.00	25.00c	34.50c	.11c	.21c	.10	.12	.26
Dallas	e	40.00	e	23.95	42.97	.1012	.1898	26.99	47.97	.0987	.1062	.1423
Denver	....	43.00	....	....	....	....	....	....	....	....	....	....
Detroit	....	....	....	29.05	....	.12b	....	.120b/c	....	.092	....	.1958
Kansas City	....	40.00d	....	19.05el	....	....	....	.075c/e	.0775c	.065c	....	....
Los Angeles	e	....	e	12.50dm		12.50dn		14.00d		12.50dn	.0775g	.1575g
Minneapolis	....	....	2.83h	24.00	35.00	22.00c	33.00n	24.00	35.00	09	.12	.22
Montreal	137.00	e	e	27.00n	36.65n	16.70n/c	18.70n/c	16.30n/c	18.30n/c	13.20n/c	.174n	.215n/c
New Orleans	....	....	....	16.50e	....o	16.50e/c	....o	.08e/c	....o	.0775	.08	.1425e
New York	....	....	2.35f	24.50	36.86q	23.50c	42.88q/c	.0960c	.1817q/c	.0940	.0990	.1797q
Philadelphia	150.00	110.00	4.06	23.00	....	22.00c	....	.085c	....	....	....	....
Pittsburgh	165.00	42.00	4.50	23.00	36.00	11	23	27.00	40.00	.095	.10	.21
St. Louis	....	....	....	21.65f		16.83	....	.0925a		.15	.1081	.25
San Francisco	....	57.75c	....	15.50g	31.00g/p	15.50g/c	....	17.50g		....	.09	.16
Seattle	....	....	....	15.50h	36.00h	16.00/c	....	17.50h	21.25h/c	16.00/c	.08h	.09h

‡ Delivered.
PAVING BRICK & BLOCK: *a* C.L. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* F.o.b. Buffalo, Kans. *e* Not used. *f* 2" interior 6# treat. *g* 3". *h* 8# treat.
ASPHALTS: *a* Price at plant Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* Bulk refinery. *j* F.o.b. refinery, Englewood, Calif. *k* 50-110 penetr. *l* Less than 100 penetr. *m* 40-80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* Use of used drums. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 25-gal. drums. *u* Per 100 gal. *v* Per ton. *w* Per gal.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES–PLATE	REINF. BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.40	$3.45	$6.75	....	$68.00	$75.00	Not	$4.40	$5.35	$4.20	....
Chicago Area	3.40	3.45	6.75	$4.20	68.00	75.00	avail-	4.40	5.35	4.20	....
Pittsburgh Area	3.40	3.45	6.75	4.20	68.00	75.00	able	4.40	5.35	4.20	....
Buffalo Area	3.45	3.45	6.75	4.20	68.00	75.00	...	4.40	5.35	4.20	$8.50
Cleveland	....	....	6.75	....	.....	.....	....	....	....	....	8.50
Youngstown Area	....	3.45	....	....	.....	.....	....	....	5.35	....	....
Geneva	3.40	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	4.15	....	....	.....	.....	....	....	5.35	....	....
Pueblo	3.40	3.45	....	....	68.00	75.00	....	4.40	5.35	4.20	8.50

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb base price	REINFORCING BARS Per 100 lb., base price *u* 5 tons to carload lot *b* New billet	Rail steel	Add for switch	$/cwt for Del.	EXPANDED METAL LATH *c* Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$4.75	$5.225*k*	$5.225*k*	$.025	$.10	$31.50	$31.50			
Baltimore	5.51	4.47*f*	....	....	.10	40.00	43.00			
Birmingham	5.08	5.08	5.50	.05	.15	43.00*p*	45.50*p*			
Boston	5.62*k*	5.46*k*	5.46*kc*	....	.10/.15	31.00	33.00	A.P.M.* Joliet, Illinois, Donora, Penn., $2.42	A.P.M.* Joliet, Illinois, Donora, Penn., $1.67	A.P.M.* Joliet, Illinois, Donora, Penn., $2.54
Chicago	4.90-5.05	4.30*ff*	4.30*f*	.0625	....	31.00‡	33.00‡	F.o.b. Mill: Monessen, Penn. $2.36†	F.o.b. Mill: Monessen, Penn. $1.61†	F.o.b. Mill: Monessen, Penn., $2.48†
Cincinnati	5.44*jr*	5.50*r*	....	....	....	33.00*zee*	35.00-*zee*			
Cleveland	5.00*hh*	4.37*e*	....	....	.10	34.50	36.50			
Dallas	6.25	5.00	5.00	....	....	43.50	46.00			
Denver	6.45	6.65*c*	....	....	....	47.00*s*	54.50*qs*			
Detroit	5.48	....	...	....	.10	33.00*x*	42.00*q*			
Kansas City	5.50	4.80*nl*	...	....	....	37.00	39.00			
Los Angeles	5.45*f*	5.40*y*	....	....	.15	37.00*f*	38.50*kk*			
Minneapolis	5.29	5.83*ll*	5.83*ll*	....	.15	33.00	35.00			
Montreal	6.25*i*	5.15*i*	5.15*y*	....	....	44.10*h*	46.80*h*			
New Orleans	....	5.00*kk*	....	.05	.10	32.00	32.00			
New York	5.13*r*	5.48	5.33	....	.15/.20	33.00*nt*	35.00*nt*			
Philadelphia	5.25	5.55	....	....	....	34.50‡	36.50‡			
Pittsburgh	4.90	4.90/5.10	4.40/4.50	.05	.10	32.50	34.50			
St. Louis	5.42*h*	4.77*e*	4.77*e*	....	....	42.00*aa*	48.00*aa*			
San Francisco	5.90*ss*	5.65	....	....	....	36.50	38.50			
Seattle	3.90*e*	5.25*el*	....	....	....	52.00*smm*	42.00*smm*			

* At Producing Mill as we go to press. † Price change not announced

‡ Delivered. *a* Mill prices. *b* 1–5 tons, add 35c. Less than 1 ton, add 50c. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. *i* Dominion tax exempt. *j* Provincial and Municipal tax extra. *k* Plus Dominion, provincial and Municipal sales tax. *l* Price per ton. *m* F.o.b. city. *n* Intermediate and hard grade, new billet. *o* Per sq. yd. *p* 5 to 15 tons base. *q* Del. of 5000 sq. yd. or less. *r* Std. ribbed. 4 lb. per sq. yd. *s* 5 tons or over. *t* LCL. *u* Asphalt coated. *v* Note: Revised size extra—1 in., 1¼ in., 1½ in., 10c; ¾ in., ¼ in. 15c, 1 in. 20c, ½ in. 35c, 2 in. 55c, ¼ in. $1.30. *w* Under 20 tons. Straight. *x* Copper bearing. *y* 2.5 lb. per sq. yd. *z* $0.0003 transportation tax included. *aa* Copper alloy. *bb* Delivered truck to job. Contractor to do unloading. *cc* F.o.b. dock. *dd* F.o.b. cars. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales tax. *hh* Delivered price is $5.00. *ii* Rolled at Geneva mill. Shapes rolled at Fontana. $6.90. *kk* 1" ribbed. *ll* 5 to 8 tons. *mm* 2% off for cash.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

Mill	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *x*	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13–44T std. 8 in.	std. 12 in.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered; ASTMC 14–41 12 in.	24 in.
Atlanta	$89.50	$0.43	$0.67	$3.39	$7.00	$114.00	$140.00	$0.45	$2.00
Baltimore	93.86	.51	.98	3.95	10.00	220.00	341.00	.80	2.25
Birmingham	82.50	.40	.72	2.84 *v*	....	210.00‡	375.00‡	.90	2.50
Boston	97.46	.413*uvz*	.823*uvy*	3.60*uvy*	10.00*uvy*	173.40	267.60	1.45‡*mq*	3.60‡*mq*
Chicago	96.49	.51	1.00	4.25	13.25	150.00‡	270.00‡	.70	2.35
Cincinnati	94.90	.55	.775	3.555	10.50	166.80‡	257.70‡	.60	2.25‡
Cleveland	97.13	.357*z*	.668*lz*	3.015*z*	8.405*z*	147.50	231.00	.65	2.50
Dallas	99.28	.365	.657	2.63	6.25	.....	.....	.49	1.60
Denver	104.36	.41*dd*	.71*dd*	2.98*dd*	.....	.....	.....	.74*dd*	2.50*dd*
Detroit	92.13	.55	1.06	4.18	12.09	200.00‡*m*	310.00‡*m*	.65	2.50
Kansas City	98.41	.418*m*	.76*m*	...	...	215.00*m*	375.00*m*	.60*l*	2.00*l*
Los Angeles	111.06	.426	.927	4.532	11.298	193.00‡	324.60‡	.72	....
Minneapolis	91.86-100.67	.62*mo*	1.12*mo*	4.35*mo*	.....	.....	.....	1.29*h*	3.67*h*
Montreal	100.00	.77*s*	1.35*s*	4.47*s*	7.23*es*	.....	.....	72.00‡*kaa*	218.00‡*kkaa*
New Orleans	92.68	.448	.81	4.36	8.79*	231.00*bb*	405.00*bb*	.65	2.29
New York	92.80-97.50	.60	1.12	4.40	12.20	.....	.....	1.00	2.50
Philadelphia	90.47	.54	.99	4.08	10.28	235.00‡	300.00‡	1.25*h*	3.20*h*
Pittsburgh	97.76	.364*m*	.70*m*	2.70*m*	6.625*m*	147.50	230.00	1.05*h*	2.50*q*
St. Louis	94.27	.48	.92	4.80	9.00	.....	.....	1.15*il*	2.45*il*
San Francisco	111.06	.50*il*	.99*il*	4.32*il*	10.80*il*	188.00*il*	313.00*il*	.69	2.85
Seattle	112.95	.51*b*	.91*b*	.....	.....	150.00*c*	.....	.80*ee*	2.40

Mill	*WROUGHT STEEL PIPE (Full standard weight) 3½ to 6 in. Lap Weld† Black	Galv.	2½ & 3 in. Butt Weld† Black	Galv.
Lorain, Ohio	44.5	42.5	48.0	46.0
Alliquippa, Pa. *x*	44.5	42.5	48.0	46.0
Sparrows Pt., Md. *x‡*	44.5	42.5	48.5	46.5
Benwood, W. Va. *	44.5	42.5	50.5	48.5
Youngstown, O. *	44.5	42.5	50.5	48.5
Indiana Harbor, Ind. *	44.5	42.5	49.5	47.5
Sharon, Pa. *	44.5	42.5	50.5	48.5
Wheeling, W. Va. *x*	44.5	42.5	50.5	48.5
Etna, Pa. *x*	44.5	42.5	48.0b	46.0b
Fontana, Calif. *x‡*	44.5	42.5	39.5b	37.5b

Mill	*WROUGHT STEEL PIPE (Full standard weight) 3½ to 6 in. Lap Weld† Black	Galv.	2½ & 3 in. Butt Weld† Black	Galv.
Lorain, Ohio	30.0a	27.0	30.0a	27.0
Alliquippa, Pa. *x*	43.5a	42.5	36.5a	35.5
Sparrows Pt., Md. *x‡*	43.5a	42.5	33.5ab	32.5
Benwood, W. Va. *	35.5	34.5	35.5	34.5
Youngstown, O. *	35.5	34.5	35.5	34.5
Indiana Harbor, Ind. *	35.5	34.5	35.5	34.5
Sharon, Pa. *	35.5	34.5	35.5	34.5
Wheeling, W. Va. *x*	35.5	34.5	35.5	34.5
Etna, Pa. *x*	33.0b	32.0b	33.0b	32.0b
Fontana, Calif. *x‡*	33.5ab	32.5ab	18 tab	

‡ Delivered. † F.o.b. *a* B. & S. class B and heavier, CL. Burlington, N. J. (base) $87.50. *b* Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $5 per ton additional; 30 in. and larger, usually $1 per ton less. *c* Extra strength ASTM C 200–44T. *e* 4 in., $90. *f* 8S301-A. *g* 30 in. *h* Culvert pipe. Reinforced, ASTM C76–41. *i* Reinforced. ASTM C75–41. *k* Reinforced. ASTM C76–37. price is based on LCL (no minimum). *l* Within switching limits. *m* ASTM C13–40. *n* F.o.b. city. *o* 2.0 lengths. *q* 3.0 lengths. *s* CESA A 60–1941 specifications used. *aa* No standard specification in Can. *bb* Freight allowed to destination in city. *cc* Truck loads f.o.b. plant Newton. *dd* LCL delivered, f.o.b. truck. *ee* 1% off for cash. * Not stocked, only made to order.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ¼ in., 54¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8¢; 1 in., 11¢; 1¼ in., 17¢; 1½ in., 23¢; 2 in., 27¢; 2½ in., 37¢; 3 in., 58¢; 3½ in., 76¢. *Lap weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steel pipe; Discount for Pittsburgh base. *Butt weld* — 1 in and ⅜ in. black, +4.5, galv, +27.0; 1¼ in. black, 1.5, galv, +23.5; 2 in. black 2 galv, +23.0. *Lap weld* — 2¼ in. to 3½ in. black + 5, galv, +26.5; 4½ in. to 8 in. black + 2, galv, +22.0. Freight rates to destination to be added to name delivered price.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box.

Prices in Bold Face

All Fir boards, dimension, planks No. 2, Fir small timbers and timbers is No. 1. Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta †	**$70 00**	**$71 00**	**$60 00**	**$62 00**	**$65 00**	**$68 00**	**$70 00**	.....	.....
Baltimore	**63 00**	**68 00**	**60 00**	**60 00**	**60 00**	**65 00**	**80 00**	.....	.....
	78 00	*78 00*	*78 00*	*78 00*	*78 00*	*78 00*	*84 50*	*72 00*	*72 00*
Birmingham	**73 00**	**76 00**	**63 00**	**65 00**	**68 00**	**75 00**	**85 00**	.....	.....
	65 00	*65 00*	*65 00*	*65 00*	*65 00*	*65 00*	*81 00*	*81 00*	*81 00*
Boston	**86 00**	**86 91**	**91 00**	**91 00**	**91 00**	**96 00**	.....	.....	.....
	91 95	*91 95*	*98 95*	*81 85*	*81 85*	*101 105*	*101 105*	*101 105*	*101 105*
Chicago ‡	**80 82**	**82 84**	**72 74**	**81 83**	**84 85**	**85 87**	**90 00**	.....	.....
‡	*81 85*	*85 86*	*88 84*	*88 84*	*85 86*	*85 87*	*87 00*	*91 92*	*91 92*
Cincinnati	**80 00**	**82 00**	**80 00**	**80 00**	**82 00**	**85 00**	**93 95**	.....	.....
	88.00	*88.00*	*88.00*	*88.00*	*90.00*	*92.00*	*95.00*	*95.00*	*95.00*
Cleveland	**78 00**	**80 00**	**66 75**	**80 00**	**81 00**	**82 00**	*85.00*	*85.00*	*85.00*
Dallas †	**54 00**	**60 00**	**60 00**	**53 00**	**56 00**	**57 00**	**90 00**	.....	.....
Denver	*Not in stock*		*88.00*	*85.00*	*85.00*	*85.00*	*104.00*	*114.00*	*118.00*
Detroit	**78 00**	**81 00**	**66 00**	**79 00**	**80 00**	**81 00**	**95 00**	.....	.....
	77.50	*77.50*	*80.00*	*80.00*	*79.00*	*78.00*	*88.00*	*85.00*	*85.00*
Kansas City	**100 00**	**100 00**	**90 00**	**95 00**	**95 00**	**100 00**	.....	.....	.....
#	*85.00*	*85.00*	*90.00*	*95.00*	*90.00*	*90.00*	*100.00*	*125.00*	.....
Los Angeles *	*71.00*	*71.00*	*71.00*	*71.00*	*71.00*	*71.00*	*82.00*	*100.00*	*82.00*
Minneapolis ‡#	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*120.00*	*120.00*	*120.00*
Montreal ab	70 00	74 00	70 00	72 00	75 00	83 00	.....	.....	.....
	140.00	*140.00*	*140.00*	*140.00*	*140.00*	*140.00*	.....	*155.00*	.....
New Orleans †	**66 00**	**70 00**	**70 00**	**75 00**	**75 00**	**70 00**	*85.00*	.....	.....
†	*68.70*	*68.70*	*71.00*	*75.00*	*72.50*	*72.50*	*67.00*	*67.00*	*100.00*
New York ‡	**90 97.50**	**93 00**	**100 82.50**	**87.50 87.50**	**92.50 90. 95.**	**95 100**	**97.50/102.50**	.....	.....
‡			*Range from $92.50 to $97.50*				*97.50/107.50*	*105.115*	*105/115*
Philadelphia			**Range from $88.00 to $97.00**				*88.97*	.....	.....
			Range from $105.00 to $115.00				*105/115*	*105/115*	*105/115*
Pittsburgh †	**75/80**	**75/80**	**75/80**	**75/80**	**75/80**	**75/80**	**100 00**	.....	.....
†	*90/100*	*90/100*	*90/100*	*90/100*	*90/100*	*100/110*	*120/130*	*120.00*	*120.00*
St. Louis ‡c	**89 25**	**91 50**	**78.00/82.50**c	**87.75**d	**90.00/94.25**c	**92.00**e	.....	.....	.....
‡c	.....	.....	*93.75/97.75*	*90.25*e	*90.25*e	*90.25*e	*110.00*e	*127.00*	*127.00*
San Francisco †	*68.00*	*68.00*	*68.00*	*66.00*	*66.00*	*68.00*	*65.00*	*65.00*	*65.00*
Seattle †	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*

† F.o.b. mill. ‡ Delivered. ¢ Retail-F.C.I. * Yard prices.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce & Tax exempt. c 5M lots. d 8-12 ft. lengths. e 8-16 ft. lengths. f 18 ft. or under. g No. 1 common. h 10-12 ft. lengths. i 8 ft. lengths. j 10-16 ft. lengths. k 12-14 ft. lengths.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $145.00; on ⅜", $170.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. a Lower rate by water shipment. b 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

	LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment* (See note for base price)	
	2x12 Rgh	12x12 Rgh	⅜"*	¼"*
Atlanta †	.....	.....	**$22 32**	**$27 24**
Baltimore	120 00	120 00	22 86	27 90
	.....	.....	.....	.....
Birmingham	115 00	125 00	21 78	26 58
	.....	.....	.....	.....
Boston	114 00	114 00	22 86	27 90
	.....	.....	.....	.....
Chicago ‡	114/116	114/116	18 72	22 80
‡	.....	.....	.....	.....
Cincinnati	.....	.....	21 78	26 58
	.....	.....	.....	.....
Cleveland	.....	.....	22 20	27 12
Dallas †	83 00	90 00	18 72	22 80
Denver	.....	.....	13 92	16 98
Detroit	95 00	.....	21 78	26 58
	.....	.....	.....	.....
Kansas City	*110.00*	.....	16 56	20 16
#	.....	.....	.....	.....
Los Angeles *	.....	.....	13 38ab	16 26ab
Minneapolis ‡#	.....	.....	16 56	20 16
Montreal ab	.....	.....	.....	.....
	.....	.....	.....	.....
New Orleans †	100 00	105 00	18 72	22 80
†	.....	.....	.....	.....
New York ‡	190/220f	190/220f	22 86	27 90
‡	.....	.....	.....	.....
Philadelphia	180 00	180 00-	22 86	27 90
	.....	.....	.....	.....
Pittsburgh †	.....	.....	22 56	27 48
†	.....	.....	.....	.....
St. Louis ‡c	.....	.....	18 72	22 80
‡c	.....	.....	.....	.....
San Francisco †	*65 00*	*65 00*	*10.08a*	*12.30a*
Seattle †	*62.50g*	*62.50g*	*62.50g*	*62.50g*

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Jan. 16, 1946a Single or Double Thickness A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	76%	76%	$0.2025	
Baltimore	66–10%	67–10%	.2025	
Birmingham	67%	67%	.1575	
Boston	60%i	60%i	.2025	
Chicago	65%	65%	.2025	
Cincinnati	66–10%e	66–10%e	.2025	Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%
Cleveland	66–10–10–10%	66–10–10–10%	.2425	
Dallas	65%	65%	.215	
Denver	67%	67%	.2075	
Detroit	66–10–10%	66–10–10%	.2025	
Kansas City	65%e	65%e	.2075	
Los Angeles	58%	63%f	.21	
Minneapolis	64%	64%	.2075	
Montreal	40–5%bc	40–10–5%bc	19..55h	
New Orleans	68%	68%	.2125	
New York	71%	72%	.32g	
Philadelphia	69%	70%	.2025	
Pittsburgh	70%	70%	.175	
St. Louis	70–10%	70–10%	.2075	
San Francisco	66%	73%	.2075	
Seattle	54%	55%	.21	

Glass: a Jobbers' list price per box, 14 x 20, ss, $20.75 for A quality, $18.00 for B quality; 14 x 20, ds, $30.75 for A quality, $26.00 for B quality. b Discount from list, Sept. 1939; sales tax included, but 6% tax exemption not allowable for. c Single thickness. d Discount from list of Aug. 15, 1938. e ss; ds—6.2%. i Double thickness 65%.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. h F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $21.10.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C. L. 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.155	$0.1825	$0.2025
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.16 – .1675	.1875–.20	.2075–.22
Rocky Mtn. States	.16 – .1725	.1875–.20	.2075–.225
Pacific N. W. States	.1575–.17	.19 – .2025	.21 – .2225
Pacific S. W. States	.155 – .1625	.1875–.195	.2075–.2175

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	.....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.46	.....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.50	.....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	.....	.79
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	.....	.80
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50	.87
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	.....	.83
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	.....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak s	.....	.....	.....	.....
	Pine s	.....	.....	.....	.....
New York	S. L. Sap Pine	$1.65	$2.85	$2.00	$3.30
	Mixed Oak	1.80	3.05	2.50	3.60
Birmingham	Hardwood	1.00	1.60a	.....	2.25a
Chicago	Red Oak	.....	2.50/2.60a	.....	3.52/3.45a
Los Angeles	Douglas Fir	.....	.....	.....	.....
	Redwood	.....	.....	.....	.....
Philadelphia	Red Oak	2.33	3.13a	3.10	4.25a
St. Louis	White Oak	2.65		3.40	
	Red Oak	2.55	3.25a	3.35	4.10a
	Sap Pine or Cypress	3.15a		4.00	
San Francisco	Douglas Fir	1.28e	2.24f	1.70b/	3.05caf
Montreal	Birch or Maple	h	h	h	h

Tr.— Treated; Untr.— Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell. e Green. f F.o.b. cars. h No constant price available. s Not available

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$4.50
Chlorine cylinders, liquid, per lb. f.o.b. works	.07–.12
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	22.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	1.80
Soda ash, 58%, in paper bags, per 100 lb. dense	1.35
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.50
Sulphate of copper, in bags, 99% per 100 lb f.o.b. works	7.00

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION—SCORED Per M. lots of 2,000 pieces or over. 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE—LOAD BEARING—SCORED Per M. lots of 2,000 pieces or over. 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton. In paper, Carload lot. Hydrated finishing	Common hydrated	Pulverised, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$25.00	$25.00	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	32.00*k*	35.00*k*	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	20.00*ff*	22.50*gg*	24.74	16.30	.....
Boston	140.00†	149.00†	280.00†	317.00†	.....	.....	32.00*s*	35.00*s*	30.80†	26.40†	.....
Chicago	115.00	122.50	230.00	.....	.....	.....	21.00	23.00	28.50	23.00	.....
Cincinnati	170.00*j*	180.00*j*	240.00*jdd*	295.00*f*	.....	.....	32.25*f*	44.00*f*	24.25*f*	24.25*f*	24.25
Cleveland	118.00*cc*	126.00*cc*	236.00*cc*	.....	.....	.....	28.50	28.50	24.00	22.00	27.50*ss*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	33.25	28.00	22.00	.....
Denver	.....	.....	.....	.....	.....	.....	32.00	32.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	116.65	124.40	233.25	233.25	$288.65	$331.00	31.50*cc*	30.00*cc*	28.00	26.50	.....
Kansas City	115.00	122.50	.....	.....	.....	.....	22.63*a*	25.12*c*	36.00*p*	30.00*p*	30.00*p*
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	20.00*kk*	.....	.....	36.00	32.00
Minneapolis	158.00*p*	176.00*p*	330.00*p*	176.00*up*	.....	.....	30.00*ep*	34.00	35.00*bbe*	26.00*bbe*	38.00*bbde*
Montreal	115.00*ac*	125.00*aq*	225.00*aq*	.....	.....	.....	25.50	35.50	22.40*u*	.....	.....
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	38.00*v*	26.00	37.50
New York	118.20*h*	126.00*h*	173.30*ch*	189.50*hn*	.....	.....	33.00	.....	34.40	26.80	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	27.00	30.00	31.00	19.50	24.50
Pittsburgh	98.00	105.80	181.85	207.30	265.35	303.60	26.00	38.00*y*	24.00	19.00	2.97*m*
St. Louis	120.00	138.50	252.50	252.50	339.50	.....	32.50*id*	30.50*id*	60/.80*aaap*	.60*aaap*	1.00*aaspee*
San Francisco	132.00*a*	148.50*a*	198.00*dda*	148.50*na*	.....	.....	32.00	.....	24.95	24.95	2.49*m*
Seattle	150.00*cc*	160.00*cc*	.....	160.00*ccw*	.....	.....	32.00*s*	39.00*s*	34.00*ahh*	34.00*ahh*	3.60*mhh*

† F.o.b. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12-in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed tile. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. ‡ F.o.b. plant. * All load-bearing, non-load-bearing no longer nuf'd in Detroit.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases In oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$16.00	$26.375	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	15.75	26.00	2.10	4.27	2.00	2.96	3.94	3.94	.55	36.00
Birmingham	16.00	26.375	3.90	3.40	....	2.80	2.75	2.75	....	40.50*ss*
Boston	15.75	26.00	....	....	....	2.68	....	2.67‡*q*	.36	34.00
Chicago	15.75	26.00	....	....	....	2.34‡*u*	2.54‡*o*	2.54‡*o*	34.00‡*bbs*	37.00‡
Cincinnati	15.75	26.00	2.90	2.90	....	2.44‡	2.54‡*o*	2.54‡*o*	.35*y*‡	40.80‡
Cleveland	15.75	26.00	2.50	2.75*s*	2.35	2.32	2.41*o*	2.41*o*	.30*y*	32.00
Dallas	16.00	26.75	....	4.05	....	3.50*z*	3.75*q*	4.35*q*	.36	46.00
Denver	16.25	26.50	2.63	4.38	2.48	3.20*o*	2.20*o*	2.20*o*	.41*ff*	40.00
Detroit	15.75	26.00	2.50/2.60	3.00/3.40	2.50/2.60	2.20	2.29	2.29	.397	33.00
Kansas City	15.75	26.125	....	....	....	1.65*e*	....	2.50	.315*y*	.....
Los Angeles	15.75	26.25	2.80	3.75	3.80	2.41	1.91*e*	*l*	.45	*l*
Minneapolis	15.75	26.125/28.55	....	....	....	2.20*idd*	2.29*idd*	2.29*idd*	.336*idd*	34.00*rdd*
Montreal	.....	22.00	3.75*t*	4.20*t*	3.62*t*	3.25*t*	3.00*ff*	3.00*ff*	.79*t*	2.60*kt*
New York	15.75	26.00	3.45*y*	....	....	2.32	2.41*o*	2.41*o*	.34*s*	35.00
Philadelphia	15.75	26.00	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	15.75	26.00	2.00	2.00	1.90	2.78	2.81*o*	2.81*o*	.37	38.00
St. Louis	15.75	26.00	....	....	....	2.20	2.42*h*	2.42*h*	.41	35.00
San Francisco	15.75	26.25	1.80	2.75*n*	1.35	2.27	3.30*aa*	....	.38*q*	.....
Seattle	15.75	26.50	2.67*m*	2.67*m*	....	3.23*mgcc*	3.24*hmcc*	....	.49*mcc*	48.25*jmc*

‡ Delivered. Note: Red lead in oil 50¢ higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll, 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* May, 1941 price. *o* Per 60-lb. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* ASTM Spec. D266-41 *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large pain. contractors is $1.25 less. *z* Mineral surfaced. *y* 55-gallon container. *z* Drums *cc* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *ee* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor—Building	Common Labor—Heavy Const.
Atlanta	$2.50	$1.85	$2.00	$2.00	$2.00	$2.00	$2.00	$0.85	$0.95
Baltimore	3.00	2.20*d*	2.55*e*	2.40/2.60	2.25*p*	2.25	2.25	1.25	1.25
Birmingham	2.50	1.95	2.20	1.875	2.20	2.25	2.25	1.00	1.10
Boston	2.625	2.25	2.55	2.60	2.70	2.50	2.45	1.65	1.65
Chicago	2.55	2.45	2.50	2.45	2.55	2.525	2.45	1.80	1.80
Cincinnati	2.575	2.25	2.425	1.60/2.60	2.425	2.45	2.40	1.535	1.535
Cleveland	2.575	2.575*f*	2.575	2.525	2.525	2.525	2.575	1.85	1.725
Dallas	2.50*t*	2.125	2.25	2.25	2.50*t*	2.375	2.375	1.075	1.275/1.5*x*
Denver	3.00	2.10	2.10	2.25	2.50	2.41	2.40	1.40	1.35
Detroit	2.625	2.325	2.575	2.575	2.625	2.60	2.50	1.675	1.675
Kansas City	2.60	2.15	2.30	2.375	2.75	2.30	2.375	1.575	1.575
Los Angeles	2.625	2.12	2.30	2.07	3.125*a*	2.50	2.50	1.57	1.57
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.35	2.32	1.52	1.52
New Orleans	2.50	1.875	2.25	2.125	2.00	2.30	2.25	1.025	1.025
New York	3.20*h*	2.750	3.00	3.00	3.20*h*	3.00*a*	2.75*h*	1.70	1.70
Philadelphia	3.00	2.34/2.40	2.65	2.50	3.00	2.75/3.00	2.75	1.375	1.675
Pittsburgh	3.00	2.50	2.625	2.65	2.625	2.575	2.50	1.50	1.50
St. Louis	2.833*c*	2.45	2.50	2.55	2.50	2.50	2.50	1.60	1.50/1.75
San Francisco	2.8125	2.225	2.50	2.19	2.8125	2.50	2.50	1.55	1.55
Seattle	3.00	2.195	2.395	2.33	2.495	2.395	2.50	1.795	1.83
Montreal*	1.40	1.25	1.25	1.20	1.40	1.35	1.11	.90	.80

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund eff. 7/49. *d* 5¢ hr. reduction pending a new 2-yr. contract. *e* 10¢ reduction eff. until May 1, 1950, when an increase of 10¢ hr. goes into effect. * Cost of living bonus now included in basic wage. *f* Includes 10¢ per hr. tool replacement. *t* Plus $5.00 daily bonus.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Nov. '49	Dec. '49
Common Wages—Building (8 hr. day)	av. per hr.	.57	.57
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.75	.75
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.25	1.25
Bricklayers (8 hr. day)	av. per hr.	1.25	1.25
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Steel Shapes 3"-15" x 12 meters	per ton	1,050.00	1,050.00
Reinf. Steel, Corr. Rods ⅜" x 12 meters	per ton	1,075.00	1,075.25*
½" x 12 meters	per ton	1,065.00	1,065.25*
⅝" x 12 meters	per ton	1,055.00	1,055.25*
¾" x 12 meters	per ton	1,045.00	1,045.25*
⅞" x 12 meters	per ton	1,045.00	1,045.25*
1" x 12 meters	per ton	1,045.00	1,045.25*
Gravel, truck load of 3½ cu. meters Blue Gravel	per tr. load	30.00	32.00
Rose Gravel	per tr. load	28.00	30.00
Cement, Std. Port. (Tolteca)	per ton	120.00	115.00
Lumber Mex. Sacred Fir (Oyamel)	per M ft.	400.00	400.00
1st Class Pine	per M ft.	750.00	750.00
2nd Class Pine	per M ft.	480.00	480.00

* 11 meters quoted, 12 meters no longer available.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.462. **ENR Common Average:** $1.485.

are businessmen

COLD-BLOODED?

OF COURSE NOT! Literally, their normal body temperature is 98.6—same as laborers, engineers or any other group of people. And, figuratively, they're no more, or no less, cold-blooded—as a group.

We all know unreasonable generalizations can be dangerously false. Common sense and on-the-job experience show us the value of dealing specifically with ideas, problems—and *people*.

Let's not make the big—and costly—mistake, then, of generalizing on religious or racial groups. Adopt and *carry out* these common sense principles:

1. Accept—or reject—people on *their individual worth.*
2. Don't listen to or spread rumors against a race or a religion.
3. Speak up, wherever we are, *against* prejudice. Work for understanding.

A PUBLIC SERVICE PROJECT
THE ADVERTISING COUNCIL

Published in the public interest by:

McGraw-Hill Publications

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

ELSIE EAVES, Manager — J. A. MAHONEY, Reports — M. R. ROESSLER, Statistics

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

WATER SUPPLY

LOW BIDDERS

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Dec. 15, watermains, Langon St. and City Line, Proj. 466-WWI, from M. & J. B. McHugh, 882 N. Markoe St., **$32,715**; Vine St., 12 to 13 Sts., Proj. 463-WWI, from Oxford Constr. Co., Commercial Trust Bldg., **$29,471**. CD 12/8.

Tex., Houston—Harris County Fresh Water Supply Dist. 14, 141403 Market St. Rd., Dec. 14, pipelines, appurtenances, from A. S. Koehler, Box 6227, **$69,424**. Frank J. Metyko, Scanlan Bldg., engr.

CONTRACTS AWARDED

La., Minden—City, City Hall, exten. water sys., to Wilks, Dake & Steed, Tyler, Tex., **$35,257**. Bids 12/5. CD 11/22.

N. C., Salisbury—City, water purification plant, Div. 6 filter plant, to W. B. Huggins & Co., Greensboro, **$186,940**. Bids 10/19. CD 10/26, under LB.

Tex., Baytown—Baytown Constr. Co., c/o R. F. Sturman, Sterling Bldg., Houston, c. l. waterlines, facilities, (2nd sect.), to L. V. Crenshaw Co., 3600 Harrisburg St., Houston, Approx. **$33,200**.

SEWERS, WASTE DISPOSAL

LOW BIDDERS

Tex., Dallas—City, City Hall, Main and Harwood Sts., Dec. 16, addnl sanitary sewers in Preston Hollow area from E. L. Dalton, Box 7125, **$64,952**, est. $93,000. CD 12/14.

storm sewers in Clements St. from Whittle Constr. Co., 3102 Kings Rd., **$34,717**, materials by owner **$17,200**, total $51,917. CD 12/1/48.

Tex., Rochester — City, Dec. 16, sanitary sewers, from S. E. Lanier, Haskell, **$52,263**. Est $60,000. CD 11/23.

Va., Williamsburg—City, Dec. 12, treatment plant, from C. H. Lawson, Williamsburg, **$72,517**. CD 11/9.

CONTRACTS AWARDED

Tex., Baytown—Baytown Constr. Co., c/o R. F. Sturman, Sterling Bldg., Houston, sanitary and storm sewers, (2nd sect.), to L. V. Crenshaw Co., 3600 Harrisburg St., Houston. Approx. **$58,000**.

BRIDGES

BIDS ASKED

Alta., Calgary—B. A. 1/18—J. D. McCarthy, secy., Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., Class 40 timber pile bridge across the Elbow River, Sarcee Camp. Approx. $100,000. Plans deposit $25.

LOW BIDDERS

Kentucky—State Dpt. Hy., Frankfort, Dec. 16, substructure and approaches for bridge over Cumberland River 0.357 mi. at Wasiota, the Pineville-Harlan Rd., F. 21 (2), S. P. 7-64 Bell Co., from Wellner contr. Co., Winchester, **$122,105**; bridge and traffic bound macad., bit. surf. treatment over Buckeye Creek at St. Helens, 0.662 mi. The Beattyville-St. Helens-Jackson Rd., S 47 (6), S. P. 65-29, Lee Co., from R. R. Dawson Bridge Co., Bloomfield, **$178,913**. CD 11/29.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, Dec. 21, construct divided hy. consisting concrete pavement 24 ft. wide, east side of 4 ft. concrete ditch over area, incl. two I-beam bridges one plate girder bridge, one rein. con. rigid frame bridge and rein. con. jacket for existing concrete arch culvert, construct two I-beam bridges, rein. con. paving 26 ft. wide and recompacted base with bit. surf. 13.172 ft. L. R. 763 (3B); 120-421; T. R. U. S. 22, U. S. 30 between city of Pittsburgh and Forest Hillsboro, Penn-Lincoln Parkway, Allegheny Co., from Adam Eidenmiller, Inc., Greensburg, **$3,521,496**; construct I-beam bridge, c. conc. paving and bit. surf. crushed aggregate base 252 ft. L. R. 48019 Spur (1), in city of Easton, Northampton Co., from Murphy Constr. Co., 2076 North 5th St., Harrisburg, **$166,678**. CD 11/17, 12/5.

Virginia—State Hy. Dpt., Richmond, Dec. 20, 1,267 ft. bridge approaches across New River at Narrows, Route 61, Giles Co., from Harves H. Stewart, 1206 S. Graham St., Charlotte, N. C., **$466,553*****2,025 ft. superstructure and approaches for bridge across the Western Branch of the Elizabeth River at Chuckatuck, 1.17 mi. Norfolk Co., from Rogers Constr. Co., 805 W. South St., Raleigh, N. C., **$428,886*****2 railroad overpasses crossing the north and south bound tracks of Southern R. R. at Culpeper, Route 3, Culpeper Co., from Coastal Construction, Inc., Box 1084, Wilmington, N. C., **$58,731*****overpass across the Norfolk & Western Ry. tracks west of Elliston, U. S. 11, Montgomery Co., from Wiley N. Jackson Co., Inc., R. F. D. 4, Roanoke, **$67,090**. CD 12/1.

Wisconsin—State Hy. Comm., Madison, Contr. 1, structure B-67-8, Big Bend Bridge and approaches 0.235 mi. The South Co. line and Big Bend Rd., S. T. Hy. 24 from Sta. 12 plus 59 to Sta. 24 plus 90, Proj. S 0818 (3), Waukesha Co., from Ray McCarty, 202 Catherine St., Kaukauna, **$63,005**. (Low Bidder changed after bids were checked. CD 12/21, under LB.

CONTRACTS AWARDED

●**La., Melville** — Transcontinental Gas Pipe Line Co., M. & M. Bldg., Houston, Tex., substructure for suspension bridge over Atchafalaya River, to Kansas City Bridge Co., B. M. A. Bldg., Kansas City, Mo., **$1,011,140**; superstructure for same bridge to American Bridge Co., Frick Bldg., Pittsburgh, Pa., **$489,747**. Bids 10/20, awarded 12/14. CD 10/28.

Missouri—State Hy. Dpt., Jefferson City, concrete floor on 40 steel I-beam and plate girder spans, length from 45 to 192 ft., over S. W. Blvd. and Terminal R. R. tracks, Rte. 69, Kansas City, Jackson Co., to M. E. Gillioz, Monett, Mo., **$722,045**. Bids 12/2, awarded 12/20. CD 12/8, under LB.

STREETS AND ROADS

LOW BIDDERS

Ariz., Phoenix—City, First Ave. and Washington St., paving streets, installing sidewalks in 21 blocks of West Phoenix Imprvt. District, from Henison Contg. Co., 151 W. Watkins Rd., **$147,093**.

Kentucky—State Dpt. Hy., Frankfort, Dec. 16, traffic bound limestone 5.732 mi. Munfordville-Hodgenville Rd., beginning approx. 7 mi. north of Munfordville and exten. in northerly direction to approx. 0.6 mi. north of Hammonsville, S-122 (2) 50-240, Hart Co., and traffic bound limestone 5.535 mi. The Vanceburg-Olive Hill Rd. beginning near the mouth of Grassy Creek and exten. in southerly direction to Emerson S 131 (2) S.P. 68-54, Lewis Co., from Wood & Barton Co., 19 Ann St., Frankfort, **$133,629**, and **$138,592** respectively, traffic bound limestone 6.185 mi. Stilltown Rd. from in Preston exten. southerly to Montgomery Co. line, RS 6-184, Bath Co., from Todd & Williams, 111 James Court, Lexington, **$54,302**. CD 11/29.

●**New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Dec. 20, drainage and grading ½ mi. stretch through the Bayway Refinery, Union Co., from Poirier & McLane Corp., 33 W. 42 St., New York, N. Y., **$1,968,730**. CD 12/1.

North Carolina—State Hy. & P. Wks. Comm., Raleigh, Dec. 20, from P. D. Cline Constr. Co., Box 549, Randleman, ST8C, sand asph. or bit. conc. binder and b. conc. surf. 22.6 mi. N. C. 87, from Cumberland Co. line to city limits of Elizabethtown, Proj. No. 3052, Bladen Co., **$372,372** est. $400,000-$500,000; added material, bit. surf. treatment and asph. or b. conc. surf. course 23.6 mi. 4 sections county roads in vicinity of Rolesville, Falls of Neuse and Knightdale, Proj. No. 4-9-38-202, Wake Co., **$193,589** est. $175,000-$200,000; ST8C, bit. surf. tr. or sand asph. surf. course 7.5 mi. from point on paved road 1.8 mi. south of Youngsville north to point on NC 56 west of Louisburg, Proj. No. 4-9-35-202 **$50,301** est. $50,000-$75,000***from J. J. Cecil & Son, Lexington, traffic bound macad., bit. surf. tr. or b. conc. surf. course 6.38 mi. from point on N. C. 109 at Cid, southeast to beginning of pavement at Jackson Creek Post Office, Proj. No. 6-154, S-301 (1), Davidson and Randolph Counties, **$95,818** est. $100,000-$125,000.

From B. D. Gentry Constr. Co., Inc., Walnut Cove, traffic bound macad., b. conc. binder and surf. course and bit. surf. tr. 10.9 mi. U. S. 311 and N. C. 89, from Forsyth-Stokes Co. line north to bridge over Town Creek in Walnut Cove, from point in N. C. 89 near intersection with 311, north of Walnut Cove to point in Danbury, Proj. No. 7530, 7571, F-154 (4), F-206 (7), Stokes Co., **$123,186** est. $200,000-$225,000***from Harvey H. Stewart, Box 1932, Charlotte, Zone 4, grading, structures 0.07 mi. U. S. 74, underpasses under Morgan St. and Southern R. R. and Lafayette St., in Shelby, Proj. No. 8233, F-150 (4), Cleveland Co., **$95,214** est. $75,000-$100,000.

From Dickerson, Inc., Box 391, Monroe, traffic bound macad., bit. surf. tr. or sand asph. surf. 9.76 mi. Part 1, from junction of county road and N. C. 33 at Cox Cross Roads, southeast 2.07 mi., Part 2, from junction of county road and N. C. 33 at Cox Cross Roads, N. E. to Pamlico River at Core Point, Proj No. 4-9-12-202, Beaufort Co., **$119,396** est. $125,000-$150,000. Asph. or b. conc. surf. course 9.9 mi. from St. John's northwest via Hanrahan and across N. C. 11 to Little Contentnea Creek Bridge near Scuffleton, Proj. No. 2-9-24-206, Pitt Co., **$67,565** est. $50,000-$75,000***from Brown Paving Co., Lexington, added material, bit. surf. tr. or sand asph. surf. course 8.6 mi. Part 1, from point at city limits of Henderson, east on county road 5.2 mi., Part 2, from point on paved road 0.6 mi. northeast of Henderson, north to U. S. 1 at Middleburg, Proj. No. 4-9-41-203, Vance Co., **$72,943** est. $75,000-$100,000***from-Towles-Cline Constr. Co., Box 1617, Wilmington, traffic bound macad. and sand asph. surf. 2.2 mi. Secondary 5 sects. of county roads in vicinity of Wilmington, Proj. No. 3-9-32-203, New Hanover Co., **$170,223** est. $175,000-$200,000. CD 12/12.

●**Pennsylvania** — State Hy. Dpt., Harrisburg, Dec. 21, crushed aggregate on c. conc. with existing pavement bit. surf. new base and existing pavement, incl. exten. concrete structure 24,471 ft. L. R. 89 (2 R) T. R. 27, north of Enterprise and north of Newton Station, Warren Co., from Smith Constr. Co. of Ohio, 1936 Glenwood Ave., Youngstown, O., **$164,741*****construct divided hy. consisting concrete base with bit. surf., bit. surf. divided hy. and existing pavement, 26.05, 33.07 ft. and variable in width on either side of concrete divisor; bit. surf. existing pavement 40.08 ft. wide, incl. altering to Broad St. subway and demolition and incidental work at lot several locations 3.346 ft. L. R. 6704, (1), (2), on Broad St. between Broad & Spring and between Broad and 19 Sts., Philadelphia Co., from Union Paving Co., 1227 N. Broad St., Phila., **$719,883*****bit. resurf. existing pavement, widen existing pavement with concrete base, bit. surf. new base and existing pavement, construct crushed stone base with bit. surf. 4.711 ft. L. R. 146 (3B); 46153 (1), 46006 (1), T. R. U. S. 422, east of Pottstown Boro, Montgomery Co., from James J. Skelly Co., Media, **$90,472*****bit. on crushed aggregate surf., one I-beam bridge 3.757 ft. L. R. 36023 (1), from point in Quarryville Boro, north, Lancaster Co., from Howard Worthington, Box 95, Line Lexington, **$73,908** ***bit. on crushed stone surf., 11,256 ft. L. R. 22031, Sect. 2 in Williamstown Boro, westerly, Dauphin Co., from D. D. M. Co., R. D. 3, Tamaqua, **$168,535*****bit. pavement with c. conc. base and plain concrete gutter bit. surf. new base, gutter and existing pavement, 25,885 ft. L. R. 238 (1-R); 272 (2-R), T. R. 102-322, from intersection of L. R. 85 south to intersection of L. R. 82 and from intersection of L. R. 20096 at Hartwood to near Stony, intersection at Reaughs Corners, Crawford Co., from Western Pa. Asphalt Paving Co., P. O. Box 1381, Erie **$156,138*****bit. on crushed aggregate surf., 4.457 ft. L. R. 310 (4), T. R. 81, between Bernville and Reading, Berks Co., from H. R. Miller Co., Inc., P. O. Box 1235, Lancaster, **$103,082**. CD 12/5.

Tex., Beaumont—Jefferson Co., Beaumont, Dec. 8, terminal road imprvs., b. conc. or c. conc. surf. Proj. 33, Sects. 1, 2, 3, in vicinity of Port Arthur, from Harrison Engr. & Contg. Corp., Texas City, **$141,409** est. $126,000. Cancelled bids to have been opened Dec. 8, b. conc. or c. conc. surf., Nederland-Port Neches road imprvs., **$265,006**. CD 11/29.

Virginia—State Hy. Dpt., Richmond, Dec. 20, from Wiley N. Jackson Co., Inc., R. F. D. 4, Roanoke, 7.23 mi. macad. Hy. U. S. 60 from near Powhatan Court House east toward Richmond, Powhatan Co., **$250,473**; reconstructing, hard-surf. 7.16 mi. Route 42, west from the Smyth Co.

PROJECTS COVERED

Projects—By Size

Construction projects here recorded cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published or the projects are dropped except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

†Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

✦	Federal Government
●	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

line, Bland Co., $140,945; reconstructing, hard-surf., 5.84 mi. Secondary Route 602, south from the Augusta Co. line toward Rockbridge Baths, Rockbridge Co., $65,375***from Ames & Webb, Inc., 3145 Broad Creek Rd., Norfolk, dual lane concrete roadway 2.11 mi. Route 170 on Granby St. between the Lafayette River Bridge and Route 168, Norfolk City $573,390***from Adams & Tate Constr. Co., 2725 Roanoke Ave., Norwich, Roanoke, reconstructing, hard-surf., 5.46 mi. Secondary Route 730, near Eggleston, Giles Co., $63,244***from Richard F. Kline, Frederick, Md., reconstructing, hard-surf., 7 mi. Route 712 between Keene and North Garden, 4.7 mi. Route 692 between Batesville and U. S. 250, Albemarle Co., $92,158. CD 12/1.

CONTRACTS AWARDED

Tex., Baytown—Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, street constr. asph. paving, (2nd sect.), to L. V. Crenshaw Co., 3600 Harrisburg St., Houston, $62,000.

EARTHWORK, WATERWAYS

LOW BIDDERS

†**Arizona-California-Nevada**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Dec. 12, one 120-inch butterfly valve and upstream flange for Unit A9, Hoover Power Plant, Boulder Canyon Proj., Spec. 2819, from United Eng. & Foundry Co., 1 National Bldg., Pittsburgh, Pa., $127,310. CD 11/23.

●†**Calif., Terminal Island (Br. San Pedro)** — Bureau Yards & Docks, Navy Dpt., Arlington, Va., 3,500 ft. rein.-con. wall around naval shipyard to prevent flooding of dry dock areas, from McDonald Kruse, Sun Valley, $1,028,000. CD 2/20-45.

†**Iowa**—U. S. Eng., 1709 Jackson St., Omaha, Neb., rejected bids, Nov. 25, standard dikes and revetment, Missouri River at Upper Blair-Upper Rockport Bends (RAH), CIVENG 25-066-50-42. CD 8/30.

†**Missouri**—U. S. Eng., 1709 Jackson St., Omaha, Neb., Dec. 15, agricultural levees unit, L-550 Sect. 20, at Rock Creek, CIVENG 25-066-50-50, from J. D. Armstrong Co., Ames, Ia., $190,682, est. $195,581, drainage structures, from Francis Orschek Co., Fremont, Neb., $67,590, est. $64,064. CD 11/28.

CONTRACTS AWARDED

Tex., McAllen—Hidalgo County Water Control & Imprvt. Dist. 3, McAllen, South Dist. tile and open drainage, $68,000; North Dist. tile drainage, approx. $60,000, own forces. CD 10/2/47.

†**Virginia and North Carolina**—U. S. Eng., foot of Front St., Norfolk, clearing Parcel A, Buggs Island Reservoir Proj., Roanoke River, CIVENG-44-110-52-20, to A. A. Holmes Constr. Co., Cartersville, Ga., $118,450. Bids 11/1. CD 10/3.

AIRPORTS AND AIRBASES

BIDS ASKED

Calif., San Francisco—RUNWAYS, etc.—B. A. 1/10—Public Utilities Comn., City Hall, paving runways, grading, etc., at San Francisco Airport, near San Bruno, Spec. 10, Approx. $50,000. Plans deposit $100. CD 11/16.

LATIN AMERICA

Mexico, Rio Yaqui—Mexican Govt., Srta. de R. H., Balderas, 94, Mexico, D. F., Dec. 19, drainage sys. for Yaqui River irrigation sys., to Constructora e Inmobiliaria, S. A., Av. de la Reforma, 1-234, Mexico City. Approx. $750,000. CD 12/7.

PUBLIC BUILDINGS

BIDS ASKED

Tex., Pleasant Grove—SCHOOL—B.A. 1/11—Pleasant Grove Independent School Dist., 1115 Buckner Dr., Pleasant Grove, via Dallas, school, $250,000. Bid date changed. Mark Lemmon, 1210½ Main St., Dallas, engr. CD 12/14.

LOW BIDDERS

Mich., Wayne—SCHOOL—School Dist., Bd. Educ., Dec. 12, 2 story, 43x62 ft., rein.-con., structural steel, masonry Washington School addn., from A. W. Kutsche & Co., 2924 W. Grand Blvd., Detroit, $279,900. CD 11/22.

Ont., Manor Park—SCHOOL—Manor Park School Bd. (Public School Sect. 29), J. C. Rutledge, secy., Dec. 12, 1 story, concrete block brick 10 room public school, from Thomas Fuller Constr. Co. Ltd., 238 Main Ave., Ottawa. Approx. $275,000. CD 11/30.

CONTRACTS AWARDED

●**Md., Baltimore**—MARKET, etc.—City, Lexington Market Auth., 116 City Hall, market bldg. and 4 story, 1,440 car capacity, parking area bldg., Lexington St. from Eutaw & Green Sts. to Consolidated Eng. Co., 29 E. Franklin St., $2,563,000. Bids 4/13. J. E. Greiner Co., 1201 St. Paul St., consult. engr., Henry Adams, Inc., 2115 St. Paul St., mech. engr., Nan Rees, select assoc., 106 W. Monument St., structural engr. CD 4/19.

Mich., Detroit—ENGINEERING—Wayne University, 1334 Broadway, (3rd unit) 3 story bsmt., 88x179 ft. and 2 story 69x97 ft., rein.-con., masonry engineering bldg., to Rozyki Bros., 2268 E. Forest St., $684,000. Bids 12/8. CD 12/13, under LH.

O., Columbus—CHILDREN'S HOME—Children's Home Bldg. Comn., c/o Comrs. Franklin Co., Columbus, general contract, 12 brick bldgs. for Franklin County Children Home,

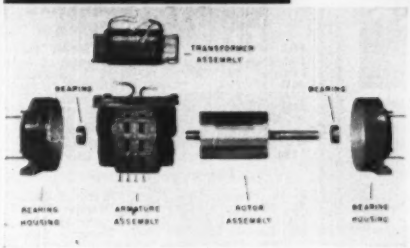
SPECIAL! CONTRACTORS

THE *New* ELECTRIC PLANT

BEACON

WITH A BRUSHLESS GENERATOR

DEPENDABLE LIGHT AND POWER...



THE BEACON ELECTRIC PLANT with the permanent magnet BRUSHLESS Generator is the most dependable and trouble-free light plant in operation today. This has resulted from years of exhaustive testing under actual operation in the field in the most adverse weather conditions.

The Brushless Generator, used exclusively in the BEACON LIGHT PLANT, eliminates brushes commutator and slip rings. The only moving part is the permanent magnet rotor which spins on sealed ball bearings requiring no lubrication. The "burn-out" proof armature, of all-welded construction, is wound with ¼" solid copper rod, capable of carrying three times the rated output of the unit. The generator is self-controlled, self-regulating and is fireproof.

The "burn-out" proof feature adds a wide range of applications to the BEACON ELECTRIC PLANT, such as pipe thawing, heavy welding and cutting. WRITE NOW FOR COMPLETE DETAILS.

Export Representative:

International Oil Equipment, Inc., Rockefeller Plaza, New York

MIDWESTERN ENGINE & EQUIPMENT CO., INC.

105 N. Boulder, TULSA, OKLAHOMA, Phone 3-4113
15 S. W. 29th St., OKLAHOMA CITY, OKLAHOMA, Phone 2-2527

DISTRIBUTORS—CONTINENTAL Red Seal Engines • UNIT Cranes & Shovels • ERIE, PAGE & P-M Buckets • TALBERT Trailers • WOOLDRIDGE Earthmoving Equipment • BARNES Centrifugal Pumps • WORTHINGTON Compressors, Air Tools • RANSOME Concrete Equipment • VIBER Concrete Vibrators • HAISS Conveyors • J & L Wire Rope • H & M Pipe Bevelers • Full line of Pipeline and General Contractors' Equipment
Owens-Corning COROMAT Pipe Wrap • GLASFAB • KAPCO Rock Shield

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS

Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

STEEL · PLATE · WORK

Fabricators and welders of all classes of steel and alloy metals. Over 100 years experience. Crane capacity 45 tons. Heavy plate shop equipment. Stress relieving furnace – 33' x 18' x 16' up to 2100°F. If you have a job that calls for a builder, not a manufacturer, send us the blueprints – talk to our engineers. Metals Fabrication Div., The Pusey and Jones Corp. 502 E. Front St., Wilmington, Del.

PUSEYJONES

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr. 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans
See our catalog in Sweet's

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG CORPORATION
2 Broadway, New York 4, N. Y. | 2123 S. 56th St. Omaha, Nebr. | 8221 Atlantic Ave. P. O. Box 631, Bell, Cal.

Franklin and Gantz Rd., to George Sheaf, 449 Neilson St., **$809,615.** Bids 12/12. CD 11/10.

●**Ont., Hamilton** — SERVICE — The Hydro-Electric Comn., 21 King St. E., hydro service bldg., John and Rebecca Sts., to W. H. Cooper Constr. Co., Ltd., Hunter and Hughson Sts., Hamilton. Approx. **$1,119,670.** G. T. Evans, 36 James St. S., archt.

Ont., Midland — SUBSTATION — Midland Public Utilities Comn., G. C. Morris, chn., 3,000 kva substation, to Ontario Electrical Constr. Co., Ltd., 120 Pearl St., Toronto. Approx. **$80,000.** A. C. Northover, c/o owner, engr. CD 3/31/48.

COMMERCIAL BUILDINGS

BIDS ASKED

Pa., Bethlehem — NURSES HOME — B. A. 1/9—St. Lukes Hospital, Osteum St., Nurses home. Approx. $250,000. CD 1/10/46.

LOW BIDDERS

Minn., Rochester — HOME — St. Joseph's Orphanage, Rev. J. A. Mich, dir., Wabasha, re-jected bids Aug. 22. 2 story, stone or brick, tile childrens home. **$700,000.** CD 8/17.

CONTRACTS AWARDED

Calif., Pico — DWELLINGS — Horn-Hirsh Development Co., 1142 S. Beverly Dr., Los Angeles, 52 frame, stucco dwellings Lindsey Dr., Delan, Durfee Ave., to Hirsh Edmonds Co., 1143 S. Beverly Dr., Los Angeles. Approx. **$341,360.** Hugh Gibbs, 441 E. 1 St., Long Beach, archt.

Md., Baltimore — RESIDENCES — Ralph W. Simmers, 2030 E. Belvedere Ave., Zone 14, one hundred 2 story, bsmnt., 19x31 ft., brick residences, Loch Raven Blvd., just north of Taylor Ave., near here, separate contracts. **$800,000,** CD 10/28/46.

Md., Eastport — APARTMENTS — Anne Arundel Apts., Inc., Robt. Schuler, pres., Capitol Gazette, West St., Annapolis. 2 story, bsmnt., steel, brick, garden type apartment, separate contracts, **$250,000.** Rogers & Torliaseero, 49 College Ave., Annapolis archts., Andre Mette Assoc., 1301 Mass. Ave. N. W., Wash., D. C., electrical and mechanical engrs.

Md., Fort George Meade—APARTMENTS—Meade Heights Apts., Inc., 4625 Edmonson Ave., Baltimore, 325 unit, 2 story, brick, residences, near here, to Uplands, Inc., 4625 Edmonson Ave., Baltimore. Hal A. Miller, 2118 Maryland Ave., Baltimore, Zone 18, archt.

Md., Towson — DWELLINGS — Thos. J. Guidera & Son, Inc., 8601 Chestnut Oak Rd., Zone 4, one hundred-twenty 2 story, bsmnt., masonry dwellings, separate contracts, **$850,000,** CD 10/28.

●**Mich., Detroit**—HOSPITAL—St. John's Hospital Corp., (Sisters of St. Joseph of Nazareth), c/o Maguolo & Quick, archts., 1305 Maccabees Bldg., 5 story, bsmnt., 200x350 ft., rein.-con., steel, masonry hospital, Seven Mile Rd. near Chandler Park Dr., to Cunningham-Limp Co., 3087 W. Grand Blvd., Approx. **$5,000,000.** Bids 10/4, awarded 12/20. CD 10/4.

Miss., Laurel — HOUSES — Moffett Insurance & Real Estate Co., Laurel, 40 houses, owner builds, **$200,000,** CD 4/27.

Pa., Glenside—RESIDENCES—George Betz, 7501 Central Ave., Phila., residential development, Kenmore and Edgley Aves., separate contracts. **$250,000.**

Pa., Norristown — RESIDENCES — Francis F. McAdams, 69 and Walnut Sts., Upper Darby, residential development, Rosemont Ave., separate contracts. **$250,000.**

Pa., Phila. — RESIDENCES—Henry Berman, 6032 Market St., residential development, Bustleton Ave., separate contracts. **$365,000.**

Pa., Phila. — RESIDENCES — L. Ostrow & Son, 4765 Tampa St., residential development, Vernon Rd., etc., separate contracts. **$250,000,** Herman H. Kline, 1211 Chestnut St., archt.

Tex., Dallas — MONASTERY etc. — Ursuline Academy, 1330 St. Joseph St., monastery and school bldgs., to T. C. Bateson Constr. Co., Irwin-Keasler Bldg., **$654,795.** Bids 12/1. CD 12/18, under LH.

Tex., Houston — STORE — J. Weingarten, Inc., 808 Prairie St., commercial store, 20 and Yale Sts. and site grading, constructing asph. paving of parking area, to Manhattan Constr. Co., 2828 Pease St., **$250,000** and **$64,000** respectively; addnl. remodeling store, steel framing, air-conditioning, day labor. Approx **$375,000.** Grand total approx. $689,000. Bids 12/6. CD 11/28.

INDUSTRIAL BUILDINGS

BIDS ASKED

R. I., Providence—FACTORY—Bids Asked—Colonial Knife Co. Inc., 287 Oak St., Providence, 1 story, 185x200 ft. cinder block factory, Dike St. $125,000. A. G. Caruolo, 296 Atwells Ave., archt. CD 12/5.

Tex., Amelia—SALES and SERVICE, etc.—Bids Asked—Cook & Co., 820 Fannin St., Beaumont, sales and service bldg., warehouse, paint and repair shop. $100,000. CD 11/7.

SOON LETS CONTRACT

Calif., Vernon — WAREHOUSE—Owens-Illinois Glass Co., 2907 Fruitland Ave., soon lets contract 62,000 sq. ft., steel frame warehouse, $135,000. David R. Ewars, 5911 Pine Ave., Maywood, engr. CD 1/26.

●**N. D., Velva**—GENERATING PLANT—Central Electric Power Co-operative, Velva, soon lets contract, steam generating plant incl.

boilers, turbines, transformers, substation equip. Approx. $3,000,000. Total est. $8,000,000. CD 11/23.

Tex., Fort Worth—WAREHOUSE—T. E. Mercer Distributing Co., 600 E 5 St., soon lets contract masonry, metal type warehouse, concrete slab fdn. $160,000. Charles E. Armstrong, Majestic Bldg., archt.

Va., Norfolk—PLANT—Armour & Co., 226 E. Water St., soon lets contract meat packing plant. Approx. $100,000.

Calif., Emeryville—WAREHOUSE—General Electric Supply Corp., 1201 Bryant St., San Francisco, Dec. 16, 1 story, 254x280 ft., concrete, steel warehouse, from Parker, Steffens & Pearce, 135 S. Park St., San Francisco, $270,000. CD 12/13.

LOW BIDDERS

Mo., St. Joseph—GARAGE, etc.—Hill Motor Co., St. Joseph, Nov. 23, garage and service bldg. from Lehr Constr. Co., 323 N. 3 St., $100,000. CD 11/18.

CONTRACTS AWARDED

●**Mich., Pontiac**—ENGINEERING—Pontiac Div., General Motors Corp., Pontiac 2 story, 320x400 ft., rein.-con., structural steel engineering bldg., to O. W. Burke Co., 1032 Fisher Bldg., Detroit. Approx. $2,200,000. Bids 12/5, awarded 12/13. CD 12/1.

Minn., Minneapolis—WAREHOUSE—General Motors Corp., 308 General Motors Research Bldg., Detroit 2, Mich., general contract 1 story, 2028342 ft. parts warehouse, 29 and Taimadge Aves. to Naugle-Leck, Inc., 714 Baker Bldg., $350,000-$100,000. Bids 11/29. CD 12/1.

N. J., Camden—WAREHOUSE—A. N. Stollwerck, Inc., 1651 Haddon Ave., 1 story, 62x 179 ft., brick warehouse, to H. John Homan, 434 Haddon Ave., Collingswood, $100,000. CD 12/16.

Pa., Norristown—SALES and SERVICE—Lee Templeton, 1416 W. Main St., 1 and 2 story, 36x110 ft., block, steel auto sales and service, to Lloyd F. Kershner, Inc., Montgomery Trust Arcade. $80,000.

Pa., Phila.—CRANE SHED—Edward G. Budd Mfg. Co., 2450 Hunting Park Ave., 1 story, irregular shape, masonry crane shed, to Ward & Co., 1700 Sansom St., $70,000. Theodore Simondinger, c/o owner, engr.

Tex., Beaumont — WAREHOUSE — Sears, Roebuck & Co., 500 Orleans St., warehouse, to Elmer Wooldridge Constr. Co., Port Arthur. Approx. $511,000. CD 11/21, under LB.

UNCLASSIFIED

LOW BIDDERS

Calif., Los Angeles—CLUBHOUSE, etc.—City Council, Dec. 15, 100x160 ft. clubhouse 45x200 ft., bath house and 65x165 swimming pool at Van Nuys-Sherman Oaks Memorial Park, from Crown Constr. Co., 1231 S. LaBrea Ave., $377,450. CD 12/2.

♦**D. C., Wash.**—PARK IMPRV.—National Capitol Parks, Interior Bldg., Dec. 16, constr. Long Bridge Rd. in East Potomac Park, from Curtin & Johnson, 1125 Brentowood Rd. N.E., $49,857. CD 12/8.

Kansas—RURAL DISTRIBUTION LINES—Northwest Kansas Electric Co-operative, Bird City, Nov. 3, 307 mi. rural distr. lines, from Kennett & Pavlicek Constr. Co., San Angelo, Tex., $305,817. CD 12/9.

CONTRACTS AWARDED

Tex., San Angelo—LIGHTING—City, City Hall, street lighting, own forces. $40,000. J. P. Burden, c/o owner, engr.

B. C., Blubber Bay—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf reconstr., to William Greenless, 500 Beatty St., Vancouver. Approx. $43,745. Bids 12/14. CD 11/30.

B. C., Prince Rupert — FISHERMEN'S FLOATS—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., renewal fishermen's floats north of drydock, to Skeena River Pile Driving Co., Prince Rupert. Approx. $54,453. Bids 11/30. CD 11/16.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Davis—City, City Hall, $125,000 bond election Feb. 28, water sys. imprvs. L. Cedric Macbee, 156 University Ave., Palo Alto, consult. engr. A. M. McKinnon, City Hall, city engr. CD 9/8/44.

Mass., Scituate—Town Bd. Selectmen, Town Hall, water pipelines, Kent, Gannett and Stockbridge Rds. and line to Beach, $105,000.

Minn., Two Harbors—City, E. Carlson, clk., WW facilities. Approx. $200,000. Banister Eng. Co., 1549 University Ave., St. Paul, consult. engr.

Okla., San Springs—City, voted bonds, WW extens $450,000. W. R. Holway, 302 E. 18 St., Tulsa, consult. engr. CD 12/5.

Tex., San Angelo—City, WW sys. rehabilitation, $712,728; c. i. watermains, laterals, $100,000. Freese & Nichols, 407 Daneiger Bldg., Fort Worth, consult. engrs.

Wash., Seahurst—Water Dist. 85, Seahurst, bond election Jan. 17, water sys., $150,000.

●**Tex., Lubbock**—City, voted bonds, water storage, $1,000,000; pumping stations, $500,000; water supply, $595,000; c. i. waterlines, sys. rehabilitation, $1,500,000. G. H. Harris, c/o owner, city engr. CD 11/25.

FLEXCO

BELT FASTENERS AND RIP PLATES

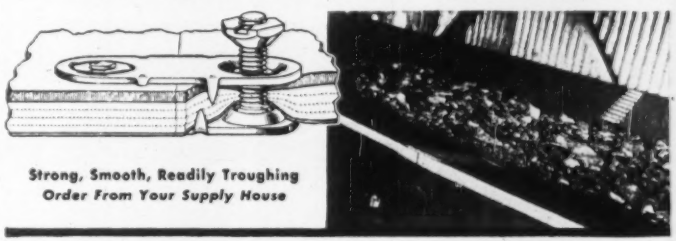
FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

FLEXCO Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

FLEXCO Rip Plates are for repairing and patching damaged belts.

Ask for Bulletin F-100

FLEXIBLE STEEL LACING COMPANY • 4665 Lexington St., Chicago 44, Illinois

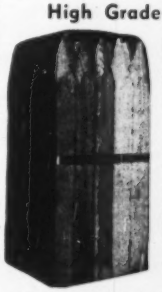


Strong, Smooth, Readily Troughing
Order From Your Supply House

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.
THE HAYWARD CO., 48-50 Church St., N. Y.

High Grade Hardwood



SURVEYOR STAKES

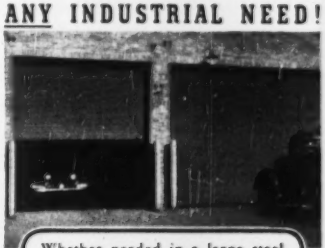
Stained Yellow Bound with Steel Strapping

	Per 100	In 1000 lots Per 100
1x2—12"	$5.05	$4.60
1x2—15"	5.15	4.65
1x2—18"	5.25	4.75
1x2—24"	6.20	5.65
1x2—36"	8.80	8.00
2x2—12"	6.50	5.90
2x2—15"	8.15	7.00
2x2—18"	8.70	7.90
2x2—24"	10.45	9.50
2x2—36"	15.00	3.85

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.
CUMBERLAND, MD.

KINNEAR Rolling Doors for ANY INDUSTRIAL NEED!



Whether needed in a large steel mill . . . or simply at a small warehouse loading-platform . . . KINNEAR can supply steel rolling doors to fit any requirement. These steel interlocking-slat curtains rise straight up and coil compactly above the lintel! And when shut they supply extra protection against fire, theft and the elements. Available with push-button motor operation from one or several strategic points. Write for details.

The KINNEAR Manufacturing Co.
Factories:
1920-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in Principal Cities

Covered Wagons for Power Units

KINNEAR ROLLING DOORS

Here's the Economy Pump designed for your big-volume requirements . . . from irrigation to condenser circulation. Delivering 200,000 gallons a minute this Economy Axial Flow Pump can tap a cloudburst or tame a flood.

Supplied in sizes from 500 to 200,000 G. P. M., Economy Horizontal and Vertical Axial Flow Pumps are low in cost, simple in design and compactly constructed. Built to meet individual specifications these Economy Pumps can be furnished in corrosion-resisting alloys if required.

For details on design advantages, write Dept. C8-1 **for Catalog G-845.**

Economy Pumps Inc.

DIVISION OF HAMILTON THOMAS CORP. HAMILTON, OHIO

VACUUM CONCRETE

Most economical to use for
PRECAST WALLS, FLOORS, ROOFS, BEAMS and COLUMNS—
IT MULTIPLIES THE SPEED

Vacuum Lined Forms can be
RE-USED AS MANY AS 8 TIMES IN ONE DAY
VACUUM HANDLING EQUIPMENT
Strips castings from molds and handles them without breakage

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

●**Ont., Hamilton**—City, J. F. Bery, clk., wid'n. John Arkledun Drain, 7 or 8 mi. water-mains, 48 in. diam., Approx. **$3,000,000.** W. L. McFaul, c/o owner, engr.

Ont., Norwood—Village, R. A. Lean, clk., WW sys. Approx. **$100,000.** G. G. Reid, 264 Avenue Rd., Toronto, engr.

SEWERS, WASTE DISPOSAL

Fla., Jacksonville—City, City Hall, incinerator and existing incinerator imprvs., addns. Approx. **$250,000.** Reynolds, Smith & Hills, 227 Park St., archts. and engrs. CD 1/10/45.

Ind., Culver—Town Bd., sewage treatment plant, 45,168 lin. ft. sewers, 204 manholes, **$300,000.** D. H. Lessig, 110½ Center St., Warsaw, consult. engr.

La., Sulphur—City, Wesley Trahan, mayor, defeated $175,000 bonds, sanitary sewer imprvs. **$600,000.** CD 11/21.

Minn., Two Harbors—City, E. Carlson, clk., sewage treatment plant, interceptors and 3 lift stations. Approx. **$200,000.** Banister Eng. Co., 1549 University Ave., St. Paul, consult. engr.

Mont., Great Falls—City, incinerator plant, **$150,000.** R. E. McCormick, city engr. CD 11/24/47.

N. Y., Lockport—Town, Town Hall, sewer in Carlisle Sewer Dist. to connect with Clinton St. Sewer. **$100,000.** CD 10/12/44.

Pa., Bristol—Bristol Boro, Bristol, sewage disposal plant imprvs., extens. **$325,000.** CD 2/7/45.

Pa., Conshohocken—Conshohocken Boro, Conshohocken, sewage treatment plant. **$750,000.** William T. Muldrew, 459 Leedom Ave., Jenkintown, consult. engr. CD 1/25/45.

Pa., Mayview—General State Auth., 18 and Herr Sts., Harrisburg, sewage disposal plant and collection sys. for rain water and sanitary sewage at Mayview State Hospital. **$422,000.** A. F. Jones, c/o owner, ch. engr. CD 9/25/47.

Tex., Bellaire—City, storm sewers, Rice Blvd., **$173,000**; Post Oak Rd., **$200,000**; Avenue A, **$225,000.** Jack Ward, City Hall, city engr. CD 7/17/47.

Tex., Harlingen—City, cancelled Dec. 29 bond election, sanitary sewers, **$210,000**; storm sewers, **$150,000.** A. Tamm, 216 E. Van Buren St., consult. engr. CD 11/25.

●**Tex., Lubbock**—City, voted bonds, sanitary sewer lines and sys. imprvs. **$1,000,000**; sewage disposal plant, **$665,000**; storm sewers, **$500,000.** G. K. Harris, c/o owner, city engr. CD 11/25.

Wash., Deer Park—Town, Town Hall, sewerage sys. and disposal plant. **$160,000.**

BRIDGES

N. B., St. John—City, and Canadian National Ry., R. Wheelwright, ch. engr., 360 McGill St., Montreal, Que., constr. Mill St. viaduct over Canadian National Ry. tracks. Approx. **$725,000.** CD 2/13/46.

STREETS AND ROADS

●**Ala., Mobile**—City, City Hall, street imprvs. incl. paving 100 mi. dirt streets. **$7,000,000.** Palmer & Baker, Inc., Staples Pake Bldg., Mobile, consult. engr.

Ariz., Phoenix—Maricopa Co. and City of Phoenix, First Ave. and Washington St. wid'n. 3 mi. Christy Rd. to 40 ft. **$112,186.** Julius Iron, Courthouse, co. engr.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, curbs, walks, gutters in Lakewood St., Bell Gardens, **$334,300**; curbs, walks, gutters in Santa Ana St., Cudahy, **$71,800.** C. E. Arnold, co. engr.

Ga., Atlanta—City, c/o Clarke Donaldson, construction chief, City Hall, street imprvt. projects for 1950, imprv. Marietta St. from Spring St. to Five Points **$58,075**; imprv. Edgewood Ave. from Peachtree to Hurt St., **$71,254.**

Okla., Oklahoma City—City, City Hall, asph. paving Ingleside Addn. west of May Ave. **$63,000**; c. conc. paving Park Manor addn. at 16 and Portland Aves., **$145,000.** H. E. Chase, c/o owner, city engr. CD 10/28/45.

Okla., Warr Acres, (br. Oklahoma City)—City, asph. paving residence streets, **$150,000.** V. G. Thompson, 1100 W. Main St., Oklahoma City, Zone 2, consult. engr.

Tex., Lubbock—City, voted bonds, street paving, **$300,000**; highway dispersal sys., **$525,000.**

●†**Alaska**—Alaska Road Comm., Juneau, regrading, asph. surf. 49 mi. Richardson Hy. from Mile 82 to Mile 131, **$2,100,000**; regrading, asph. surf. 5 mi. Fairbanks to College, **$225,000**; regrading, asph. surf. 2 mi. Anchorage to Lake Spenard, **$140,000.** CD 8/17/45.

EARTHWORK, WATERWAYS

†**Colo., Leadville** — Bureau Mines, Dpt. Interior, C St. between 18 and 19 Sts. N. W., Wash. 25, D. C., Leadville mine drainage tunnel, **$500,000.**

†**Illinois**—U. S. Eng., 826 U. S. Court House & Custom House, St. Louis 1, Mo., Cahokia Pumping Station, equipment, drainage structure with sluice gate and headwall, approx. 700 ft. earthen levee, behind flank levee along north bank of Prairie Du Pont Creek approx. 150 ft. eastward of G. M. & Q. R. R. track, and opposite approx. Mississippi River Mile 175 above mouth of Ohio River, East Side

Levee and Sanitary Dist., Proj. Item II-C, St. Clair Co.

South Dakota—State Game, Fish & Parks Comm., Pierre, construct Split Rock Lake, near Sioux Falls, **$220,000.** D. W. Loucks, c/o owner, state engr.

AIRPORTS AND AIRBASES

N. B., Fredericton—RUNWAY—Government of Canada, Hunter Bldg., Ottawa, Ont., hard faced runway, at airport **$750,000** voted. CD 6/27/45.

●**Newfoundland, Gander**—RUNWAYS, etc.—Government of Canada, Hunter Bldg., Ottawa, Ont., runways, repairs and new bldgs. **$3,770,000** voted. Dpt. Transport, Ottawa, Ont. engr. CD 3/20/48.

●**N. S., Sydney**—RUNWAY IMPRVS.—Dpt. Transport, F. T. Collins, secy., Hunter Bldg., Ottawa, Ont., imprv. runway at airport, Approx. **$1,000,000.**

Que., Dorval—TERMINAL BLDG.—Government of Canada, Hunter Bldg., Ottawa, Ont., terminal bldg. at airport, **$300,000** voted. Dpt. Transport, Ottawa, Ont., engr.

LATIN AMERICA

Cuba, Marianao—Municipality, Marianao, plans municipal stadium containing stage, orchesta shell, classrooms and amphitheatre. **$500,000.** Bureau Culture, City Hall, engrs.

Haiti, Port-au-Prince—Republic of Haiti, Port-au-Prince, plans 100 room hotel within area of the Bicentennial Exposition. **$750,000.**

Honduras, San Pedro Sula—Government of Honduras, Tegucigalpa, plans toll road between San Pedro Sula and Puerto Cortes. **500,000** lempiras.

Mexico, Mexico City—Armando Galvan Carbajal, Lerma, 198, Mexico City, plans railroad car metallic safety guards factory. **$450,000.**

Mexico, Mexico City—Pepsi-Cola Mexican Syrup Co., S. A., Lopez, Mexico City, plans fruit syrups factory. **$500,000.**

Mexico, Sontecomapan—Mexican Govt., Sria. de R. H., Balderas, 94, Mexico, D. F., plans coastwise port. **$600,000.**

Mexico, Tlalnepantla—Laminadora de Acero, S. A., Apartado 43, Tlalnepantla, Mexico, plans steel wire factory. **$500,000.**

Mexico, Toluca—Mexican Govt., Sria. de R. N., Mexico City, plans federal bldg. **$500,000.**

Peru, Ladoya—Southern Railways of Peru, Lima, plans 40 mi. railway to connect Ladoya with new port of Matarina. **4,500,000** Soles.

Trinidad, Pointe-a-Pierre — Trinidad Leaseholds Ltd., Pointe-a-Pierre, plans refinery modernization, incl. installing 15,000 bbl. per day capacity fluid cracking plant, vacuum distillation plant, addnl. tank storage laboratory, machine shop, loading wharf. **$10,150,000.**

Trinidad, Port of Spain—Robert Clay Hotel Co., 128 S. 19th St., Miami, Fla., plans air-conditioned hotel accommodating 150 guests, incl. swimming pool. **$1,000,000.**

PUBLIC BUILDINGS

Ala., Auburn—HOUSING — Auburn Housing Auth., Auburn, 314 housing units. Approx. **$250,000.**

Calif., Hawthorne—SCHOOL—City School Dist., voted **$310,000** bonds, school construction.

Calif., Carmel — SCHOOL — Carmel Unified School Dist., Carmel, plans by Thomas S. Elston Jr. & and Dolores Hess, 10 Clausen Carmel River School. **$250,978**; Carmel High School addn. **$490,000.** CD 11/11/46.

Calif., El Monte — SCHOOL IMPRVS. —City High School Dist., **$600,000** bond election Feb. 14, auditorium, gymnasium at Rosemead High School and athletic stadium.

●**Calif., Lompoc** — SCHOOLS—City Bd. Educ. defeated **$1,000,000** bonds, schools. CD 11/15.

Calif., Los Gatos—HOSPITAL—West Valley Hospital Dist., Los Gatos, plans by Robert Stanton, Box 2177, Carmel, 50-bed hospital. **$870,000.**

Calif., Lynwood — SCHOOLS—Lynwood Elementary High School Dist., bond elect. Jan. 27, elementary school facilities, **$300,000**; high school facilities, **$800,000.** CD 6/21/48.

Calif., Red Bluff — SCHOOL — Red Bluff Union High School Dist., Red Bluff, voted **$500,000** bonds, high school addns.

Calif., Riverside — AUDITORIUM — City High School Dist., Riverside plans by Ralph C. Flewelling & Walter L. Moody, 3112 Los Feliz Blvd., Los Angeles, auditorium at Polytechnic High School. Approx. **$250,000.** CD 5/13.

Calif., Tracy — SCHOOL—Tracy Elementary School Dist., Tracy, voted **$422,000** bonds Senior Elementary School.

●**Colo., Boulder** — LABORATORY — National Bureau of Standard Dpt. Commerce, Connecticut at Upton Ave. N. W., Wash., D. C. Central Radio Propagation Laboratory **$4,500,000.**

Colo., Gunnison — PHYSICAL EDUCATION, etc. — Western State College, Gunnison, plans by Aitchison & Kloverstrom, 1245 Monaco Parkway, Denver, physical education and health bldg. **$380,000.** CD 1/28/44.

Conn., Glastonbury — SCHOOL — Town Bd. Educ., Glastonbury, 2 story, basmt., 14 room, brick, steel school. **$475,000.**

ALBERT
"RINGS THE BELL"

SPEED-LAY
PIPE SYSTEM
The complete packaged PIPE SYSTEM for fast-laying, temporary and semi-permanent lines for water, compressed air and other services.
WRITE FOR FREE BOOKLET

PILING—Sheet Piling—Lightweight • Tubular —All sizes

PIPE PILES— Lapweld • Seamless • Electric Weld • Spiral Weld

PILE SHELLS—Spiral Welded • Hel-Cor Riveted

CAISSONS

PILE FITTINGS—All types and sizes for steel and wood • Cobi Pile Tips • Cast Steel and Iron Points • Plates and Shoes • Cast Steel and Malleable Iron Sleeves

CULVERTS—Corrugated • Spiral or Riveted Steel

IMMEDIATE DELIVERY

VALVES AND FITTINGS
Tube Turns—Dresser—Victaulic
Cast Iron or Steel
Forged Steel
Special Alloys
Water Main

PIPE
Wrought Iron
Steel
Structural
Cast Iron
Copper-Steel
Seamless
Electric Weld
Spiral, Lap & Butt Weld
Shore-Dredge
Speed-Lay

SPECIALISTS IN PRE-FABRICATED PIPING
Complete facilities for Bending, Coiling, Beveling, Swedging, Flanging, Grooving, Welding, Cutting to Sketch, and Threading to meet your most rigid requirements. Bitumastic or Cement Lining—Testing—All meeting Standard Specifications.

ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13th Sts., Brooklyn 11, N. Y.
Phone EVergreen 7-8100

The BELMONT IRON WORKS
Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron
STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone
PHILADELPHIA
Main Office
Philadelphia 48, Pa.
ROYERSFORD
New York Office
44 Whitehall St., N. Y. 4, N. Y.

35 Years' Experience
GUNITE CONSTRUCTION
Bridges, stacks, bunkers, pipe lining, steel encasement, repairs to disintegrated masonry, etc.
WE SPECIALIZE IN DAM REPAIRS
WHITE & McCOLL, INC.
75 WEST STREET
NEW YORK 6, N. Y.
Phone HAnover 2-0526

UNDERPINNING AND FOUNDATION CO
FOUNDED 1909

FOUNDATIONS
PILES - CAISSONS
UNDERPINNING
SHAFTS - TUNNELS
COFFERDAMS
No Job Too Large - None Too Small
ENGINEERS & CONTRACTORS
155 EAST 44th STREET, NEW YORK

Conn., Willimantic — HOUSING — City, Willimantic Housing Auth., Willimantic, plans by Reinhardt & Olson, 171 Washington St., Hartford, 80 family units, Ash St. **$800,000.** CD 11/7.

Del., Newport — SCHOOL — Krebs School Dist., 220 Walnut St., plans by G. Morris Whiteside, 2nd, Du Pont Bldg., Wilmington, school. **$427,000.** CD 9/23.

Ga., Atlanta — SCHOOL — Fulton Co. Bd. Educ., Courthouse, plans by Cooper, Bond & Cooper, Henry Grady Bldg., Southeast High School, Jonesboro Rd. **$500,000.**

Ga., Augusta—HEALTH DEPT.—Richmond Co., plans by E. Lynn Drummond, 2561 Henry St., health department bldg. **$300,000.**

Ga., McRae—HOSPITAL—Telfair Co., McRae, plans by Dennis & Dennis, Bankers Insurance Bldg., Macon, hospital. Approx. **$300,000.**

Ga., Summerville—HOSPITAL—Chattooga Co., plans by Albany Architects & Engineers, P. O. Box 709, Albany, hospital. Approx. **$250,000.** CD 8/12.

Ga., Toccoa — PRISON — State Bd. Corrections, State Office Bldg., Atlanta, Prison for Juveniles, **$250,000.**

Idaho, Rexburg—HOSPITAL — Madison Co., Courthouse, plans by L. E. Stalker, Jennie Rogers Bldg., Idaho Falls, 1 story, 200x200 ft. rein. conc. hospital, air-conditioning. **$250,000.**

●**Ill., West Aurora** — SCHOOL — School Dist. school constr., improv., incl. high school. **$2,-130,000.**

Ind., South Bend—HOME—Bd. Comrs., St. Joseph Co., L. R. Miner, aud., Court House, 2 story, masonry juvenile home, **$250,000.** Roy Worden & Assoc., 312 W. Colfax St., consult. engrs.

Ia., Des Moines — STATE — Iowa Executive Council, Des Moines, plans by Ralph Arnold, state archt., 5711 Waterbury Circle, remodel former implement bldg., for state purposes **$375,000.**

Kan., Emporia—LABORATORY, etc.—State Bd. Regents, Topeka, plans by C. E. Lee Hall, Topeka, laboratory, **$450,000** and girl's dormitory, **$500,000,** at Kansas State Teacher's College.

Kan., Herndon — SCHOOL—Bd. Educ., plans by Hibbs & Robinson, 519 S. Broadway, Wichita, combined grade and high school, **$250,000.**

Kan., Kansas City — GARAGE, etc. — Bd. Public Utilities, plans by J. D. Maughly & Co., Beacon Hill Bldg., garage and warehouse. **$600,000.**

●**Kan., Wichita**—HOSPITAL—Sedgwick Co., plans by Overend & Boucher, Brown Bldg., hospital, **$1,000,000.** CD 4-2/47.

Ky., Madisonville — HOUSING — Madisonville Municipal Housing Comm., housing, 65 single block apartments. **$100,000.**

●**La., Lafayette**—SCHOOL — Lafayette Parish School Bd., plans by Favrot & Reed, Nola Bldg., New Orleans, school bldg. program, **$3,000,000,** CD 3/24.

●**La., Monroe**—HOUSING—Monroe Housing Auth., Monroe, plans by Milton L. King, King Bldg., 400 housing units, **$3,400,000.** CD 11/28.

Mass., Holyoke—NURSES HOME—Commonwealth of Mass., Trustees of Soldiers Home, plans by Wm. Nelson Jacobs, 460 Park Sq. Bldg., Boston, 4 story, basmt., brick, steel nurses home and superintendent's cottage, Cherry Hill, **$250,000,** CD 10/17.

Mass., Natick—SCHOOL—Town Ralph Benton, chn. Bldg. Comn., brick, steel school, North Section, **$300,000.**

Mass., Scituate—SCHOOL—Town Bd. Selectmen, Town Hall, plans by McLaughlin & Burr, 131 State St., Boston, 2 story, basmt., brick, steel, high school addn. Approx. **$250,000.**

Mass., Upton — SCHOOL — Town Bd Selectmen, Town Hall, plans by Perley F. Gilbert Assoc., 53 Central St., Lowell, brick, glass block, steel school. **$250,000.**

Mich., Detroit — GARAGE, etc. — Bd. Educ., 1354 Broadway, plans by Derrick & Gambler, 515 Hammond Bldg., 1 story, 30,000 sq. ft., structural steel, masonry garage and storage for Bd. Educ. **$180,000.**

●**Mich., Port Huron** — COUNTY — Bd. Supervs., St. Clair County Bldg., plans by Smith, Hinchman & Grylls, 800 Marquette Bldg., Detroit, masonry, steel, rein. con. county bldg. **$1,500,-000.**

Minn., Blue Earth — SHOP — Faribault Co., c/o aud., plans by Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, 1 story, concrete, brick by maintenance shop. **$100,000.**

●**Minn., Minneapolis** — COLLEGE OF EDUCATION — University of Minn., R. S. Callaway, purch. agt., 323 Admin. Bldg., Main Campus, plans by Magney, Tusler & Setter, 202 Foshay Tower, College of Educ. bldg. on Main Campus. **$1,101,000.** CD 11/21.

Minn., Stillwater—GYMNASIUM—Bd. Educ., H. A. Swanson, clk., voted $150,000 bonds, school gymnasium and indoor swimming pool, **$250,000.** E. D. Cowan, E. 8th First National Bank Bldg., St. Paul, archt. CD 11/23.

Minn., Wheaton — GENERATING PLANT — Village, R. F. Eyster, clk., municipal diesel engine electric generating plant. **$100,000.** R. D. Thomas & Assoc., 400 Metropolitan Life Bldg., Minneapolis, consult. engrs. CD 8/17.

Miss., Bruce — HOSPITAL — Bd. Supervs., Calhoun Co., Court House, hospital **$252,700.**

Miss., Kosciusko — CIVIC CENTER — City, City Hall, plans by Drummond & Christian, 515 Yazoo St., Jackson, Miss., civic center. **$275,000.**

N. J., Franklinville — SCHOOL — Franklin Twp. Bd. Educ., Franklinville, plans by H. M. Klaisz, 7 N. Maple Ave., Woodbury, school. **$250,000.**

N. J., Lakehurst—SCHOOL—Lakehurst Bd. Educ., Lakehurst, plans by Thomas Henry Moran, Hillcrest Estates, Princeton, school, **$250,000.**

N. J., Westmont — SCHOOL — Haddon Twp. Bd. Educ., 408 Bradford Ave., plans by Radley & MacNeily, 8 and Market Sts., Camden, Central School. **$600,000.** Bond election Dec. 28. CD 6/9.

N. C., Raleigh—WAREHOUSE—State Bd. Pub. Bldgs. & Grounds, c/o George H. Cherry, supt., Raleigh, warehouse. **$300,000.**

●**O., Alliance** — HOSPITAL — City, $150,000 bond election Jan. 31, hospital addn. **$1,050,000.** CD 8/13/47.

O., Attica—SCHOOLS—Bd. Educ., Attica, defeated $245,000 bonds, school addn. **$200,-000;** primary school **$245,000.** CD 10/20.

O., Eaton—SCHOOL—Bd. Educ., Ralph H. Mikesell, supt., Eaton, school. **$545,000.**

●**O., Hubbard**—HIGH SCHOOL—Bd. Educ., R. C. Reynolds, school supt., Hubbard, plans by Kling & Frost, 661 Wick Ave., Youngstown, 600 pupil high school, Carlisle Alberts and Grandview Ave. **$1,000,000.** CD 11/18.

Okla., Ardmore—SCHOOL—Bd. Educ., Ardmore, plans by Harold Flood, Ardmore, Frankin School. **$250,000.**

Okla., Elk City—SCHOOL—Bd. Educ., Elk City, plans by Hudgins, Thompson & Ball, 1106½ W. Main St., Oklahoma City, school. **$300,000.**

●**Ore., Corvallis**—FOOD INDUSTRIES, etc.—State Bd. Higher Educ., University of Oregon, Eugene, plans by Burns, Bear & McNeal, 2940 S. E. Belmont St., Portland, 2 story, rein. con. brick veneer food industries bldg. **$660,000;** plans by Glen Stanton, Concord Bldg., Portland, U shaped, rein. con., brick veneer animal industries bldg. **$930,000.** CD 6/22.

Ore., Prineville — HIGH SCHOOL — Crook County School Dist., improvements. **$500,000** bond election Jan. 4. Senior High School.

Pa., Bloomsburg — HEATING PLANT—General State Auth., 18 and Herr Sts., Harrisburg, heating plant at Bloomsburg State Teachers College. **$370,000.** Gannett Fleming, Corddry & Carpenter, 660 N. 2 St., Harrisburg, consult. engrs. A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Cheyney — POWER PLANT — General State Auth., 18 and Herr Sts., Harrisburg, power plant and water well at Cheyney Training School for Teachers. **$160,000.** Simons Eng. Co., 2010 Walnut St., Phila., consult. engr. A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Cheyney — TRAINING SCHOOL — General State Auth., 18 and Herr Sts., Harrisburg, boiler plant and water well, Cheyney Training School. **$352,982.** Simons Eng. Co., 2010 Walnut St., Phila., consult. engr. CD 6/12/47.

Pa., Clarks Summit—CHAPEL, etc.—General State Auth., 18 and Herr Sts., Harrisburg, plans Dale Storch & Pope, 506 Spruce St., Scranton, Zone 3, chapel, recreation auditorium at Clarks Summit State Hospital. **$345,000.** A. F. Jones, c/o owner, ch. engr. CD 7/29.

Pa., Cresson — HOSPITAL — General State Auth., 18 and Herr Sts., Harrisburg, plans by Horace A. Bailey, Johnstown, medical service unit and alterations to tubercular hospital at the Cresson State Sanatorium. **$370,-000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., Danville — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, plans by James W. Minick, Front and Harris Sts., Harrisburg, disturbed females bldg. at Danville State Hospital. **$658,000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., Dixmont — ADMISSION — General State Auth., 18 and Herr Sts., Harrisburg, plans by William York Cocken, Century Bldg., Pittsburgh, admission bldg. at Dixmont State Hospital. **$800,000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., Edinboro — DORMITORIES — General State Auth., 18 and Herr Sts., Harrisburg, plans by Meyers & Kruger, 467 Commerce Bldg., Erie, men's dormitory, **$328,000;** women's dormitory, **$295,000,** at Edinboro State Teachers College. A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Elizabethtown — HOSPITAL — General State Auth., Harrisburg, plans by Willing, Sims & Talbutt, 1700 Sansom St., Phila., 2 story addn. to Crippled Children Hospital. **$650,000.** CD 7/29.

●**Pa., Hollidaysburg** — BUILDINGS — General State Auth., 18 and Herr Sts., Harrisburg, plans by Hunter, Caldwell & Campbell, 5 Ave. and 36 St., Altoona, buildings for disturbed patients at Hollidaysburg State Hospital. **$1,325,000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., Indiana — DORMITORY — General State Auth., 18 and Herr Sts., Harrisburg, plans by Bowers & Barbalet, Bakewell Bldg., Pittsburgh, and Carleton J. Winslow, Indiana, men's dormitory at Indiana State Teachers College. **$940,-000.** A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Lock Haven — CLASSROOM — General State Auth., 18 and Herr Sts., Harrisburg, plans by George M. D. Lewis, 445 Kressler Court, Scranton, Zone 10, classroom bldg. at Lock Haven State Teachers College. **$597,000.** A. F. Jones, c/o owner, ch. engr. CD 12/12.

Pa., Lock Haven—DORMITORIES, etc.—General State Auth., 18 and Herr Sts., Harrisburg, plans by George M. D. Lewis, 445 Kessler Court, Scranton, renovating men's and women's dormitories and administration bldg. at Lock Haven State Teachers College. **$336,-000.** A. F. Jones, c/o owner, ch. engr. CD 12/12.

Pa., Mansfield — SCIENCE — General State Auth., 18 and Herr Sts., Harrisburg, science bldg. at Mansfield State Teachers College. **$297,000.** Thomas K. Hendryx, Bradford, engr. A. F. Jones, c/o owner, ch. engr. CD 12/12.

●**Pa., Millersville** — BUILDINGS — General State Auth., 18 and Herr Sts., Harrisburg, plans by H. Clifford Kreisle, Lancaster, auditorium, **$490,000;** men's dormitory, **$482,000;** plans by Henry Y. Shaub, Lancaster, womens dormitory, **$630,000;** dining room, kitchen, cafeteria and refrigeration unit, **$330,000,** all at Millersville State Teachers College. A. F. Jones, c/o owner, ch. engr. CD 12/12.

Pa., Muncy — COTTAGES — General State Auth., 18 and Herr Sts., Harrisburg, plans by R. Douglas Steele, Williamsport, receiving cottages at Muncy Industrial Home. **$280,000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., Norristown — NURSES HOME—General State Auth., 18 and Herr Sts., Harrisburg, plans by Bolton, Martin & White, 266 S. 17 St., Phila., nurses home at Norristown State Hospital. **$658,000.** A. F. Jones, c/o owner, ch. engr. CD 2/10/47.

Pa., Phila.—WAREHOUSE—Bd. Educ., 21 and Winter Sts., warehouse. Approx. **$500,000.**

Pa., Phila. — KITCHEN, etc.—General State Auth., 18 and Herr Sts., Harrisburg, plans by Abraham Levy, 1411 Walnut St., kitchen and cafeteria at Philadelphia State (Byberry) Hospital. **$700,000.** A. F. Jones, c/o owner, ch. engr. CD 11/21.

●**Pa., Pottstown**—HOUSING—Montgomery Co. Housing Auth., Box 189, plans by Willing, Sims & Talbutt, 1700 Sansom St., Phila., housing on State Hy. 422. **$1,600,000.** CD 10/13; plans by Geo. M. Ewing, Berwyn Savings Fund Bldg., Phila., housing, North Hills Area, Upper Dublin Twp., Glenside P. O., **$500,000.**

●**Pa., Scotland** — ADMINISTRATION, etc. — General State Auth., 18 and Herr Sts., Harrisburg, plans by Frank M. Highberger, 654 Washington Rd., Pittsburgh, male administration bldg. **$770,000;** housing for boys, **$773,000,** both at Pennsylvania Soldiers' Orphan School. A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Scranton — BOILER PLANT — General State Auth., 18 and Herr Sts., Harrisburg, boiler plant for Pennsylvania State School for the Deaf. **$324,000.** Gilboy & O'Malley, Scranton, consult. engrs. A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Shippensburg — AUDITORIUM — General State Auth., 18 and Herr Sts., Harrisburg, plans by William Lynch Murray, 1604 N. 2 St., Harrisburg, auditorium at Shippensburg State Teachers College. **$660,000.** A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Slippery Rock — HEATING PLANT — General State Auth., 18 and Herr Sts., Harrisburg, steam heating plant at Slippery Rock State Teachers College. **$661,000.** The Rust Eng. Co., Clark Bldg., Pittsburgh, consult. engr. A. F. Jones, c/o owner, ch. engr. CD 12/9.

Pa., Spring City—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, plans by Douglas M. Blum, Phoenixville, tubercular patients bldg. at Pennhurst State School. **$700,-000.** A. F. Jones, c/o owner, ch. engr. CD 9/27.

●**Pa., State College** — MECHANICAL ENGINEERING, etc.—Pennsylvania State College, State College, completing mechanical engineering bldg.; addnl. sect. to physical educ. bldg.; completing Buckout Biological Laboratory; completing Burrowes Education bldg.; completing main library; new chemistry bldg.; chemical storage bldg.; Pond Laboratory addn.; greenhouses for agricultural research; physical educ. bldg. at Mont Alto Agricultural School; addnl. wing for Frear Laboratory; completing main engineering bldg.; enlarging power plant; completing general classroom bldgs.; central extension bldg.; bldgs. for livestock center; military, air and naval science bldg.; general engineering bldg. **$14,000,000.**

Pa., Torrance — EXERCISE ROOMS — General State Auth., 18 and Herr Sts., Harrisburg, exercise rooms in bldgs. for male and female juvenile patients at Torrance State Hospital. **$480,000.** A. F. Jones, c/o owner, ch. engr. CD 12/9.

Tex., Anson — HOSPITAL — City, plans by Don W. Smith, Texas Bank Bldg., Sweetwater, hospital. **$250,000.** CD 10/12.

Tex., Galveston—HOSPITAL—University of Texas, Bd. Regents, Austin, plans by C. H. Page & Son, 108-61 St., Austin, 2 and 3 story expans. crippled childrens hospital, for John Sealy Crippled Childrens Hospital. **$500,000.**

Tex., Harlingen—CITY HALL, etc.—City, cancelled Dec. 29, bond election combination city hall-fire station. **$290,000.** Alfred Tamm, 16 E. San Buren St., Harlingen. CD 6/20.

Tex., Lubbock — AGRICULTURAL, etc. — Texas Technological College, Lubbock, plans by Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, agricultural bldg. group **$500,000;** student union. CD 7/13/46.

Tex., Mason—SCHOOL—Mason Independent School Dist., Mason, plans by Buford & Feinberg, engrs. and archts., 1801 San Jacinto St., Dallas, Grammar School. **$250,000.** CD 9/15.

●**Tex., Ysleta** — SCHOOLS — Ysleta Independent School Dist., Ysleta, Junior High School addn. **$250,000;** Ysleta Grade School addn., stadium expansion, **$275,000;** Castawallader School and North Loop area gymnasium, **$250,000;** Asarate area school addns., **$275,000.**

●**Utah, Salt Lake City** — UNION — State Bldg. Bd., State Capitol, plans by Ashton, Evans & Brazier, 24 S. West Temple St., union bldg. on University of Utah Campus. **$2,500,000.**

Wash., Yakima—SCHOOL—School Bd., Yakima, plans by J. Whitney, Yakima, H. M. Gilbert and Nob Hills School addns. **$395,000.** CD 1/16/45.

Wis., River Falls — DORMITORY — Bd. Regents Normal School Madison, plans by Roger C. Kirchhoff, state archt., Madison, dormitory. **$325,000.** CD 11/11/43.

Wis., Stevens Point — DORMITORY — Bd. Regents Normal Schools, Madison, plans by Roger C. Kirchhoff, Madison, state archt., dormitory. **$325,000.**

Wis., Superior—DORMITORY—Bd. Regents Normal Schools, Madison, plans by Roger C. Kirchhoff, state archt., Madison dormitory. **$325,000.**

Alaska, Glennallen—REPAIR SHOP, etc.—Alaska Road Comn., Juneau, repair shop, heating plant. **$270,000.**

Alaska, Juneau—SCHOOL—School Bd., Juneau, school. **$400,000.** CD 6/13/45.

Alta., Edmonton — SCHOOL — Bd. Educ., H. G. Turner, secy., plans by W. W. Butchard, c/o owner, 12 room, rein.-con. school. Approx. **$600,000.** R. S. Sheppard, c/o owner, engr. CD 3/24/44.

Ont., Chatham — HOSPITAL — Province of Ontario, Toronto, plans by G. N. Williams, ch. archt., Dpt. Pub. Wks., Hunter Bldg., Toronto, 35-bed hospital. **$350,000.** CD 5/24/45.

Ont., Hamilton — HOME — City, J. F. Berry clk., Home for Aged. Approx. **$750,000.**

●**Ont., Hamilton**—HOSPITAL—Municipality, convalescent hospital. **$2,710,000.** CD 6/27/47.

Ont., Ottawa — OFFICE — Dpt. P. Wks., Hunter Bldg., Federal Office alterations, imprvs., East Block. Approx. **$365,000.** G. Brault, c/o owner, archt.

Que., Aylmer—DWELLINGS—Municipality, 123 dwellings. **$900,000.** Lanctot & Ste. Marie, 7 Main St., Hull, engrs. CD 4/30/46.

Que., St. Laurent — SCHOOL — Protestant School Bd., Mrs. R. Talhurst, secy., plans by De Belle & White, 4921 Glencairn Rd., Montreal, school addn. at Norgate Development, off O'Brien Ave. Approx. **$275,000.**

Que., Sherbrooke — SCHOOL — Roman Catholic Comn., 49 Gillispie St., school, Kingston St. for Parish of Ste. Jeanne d' Arc. **$250,000.**

COMMERCIAL BUILDINGS

●**Calif., Walnut Creek**—SHOPPING CENTER—MacDonald Products Co., 1 Montgomery St., San Francisco, shopping center, S. Main St. **$2,000,000.**

Conn., New Haven—COLLEGE UNIT—Yale School of Medicine, Yale University, plans by Douglas Orr, 111 Whitney Ave., brick, steel, concrete college unit for School of Medicine. Approx. **$250,000.**

●**Conn., West Haven**—HOUSES—Avon Co., 339 Kimberly Ave., plans by Daniel Weinstein, Ray Rd., 100 single family houses, Pauline Ave., Jones Hill and Woodmont Rds. **$1,000,000.**

Del., Wilmington—STORE IMPRVS., etc.—Kennard-Pyle Co., 617 Market St., Phila., Pa., department store bldg. imprvs., addns., alterations, **$250,000**; department store, 617 to 627 Market St., Approx. **$250,000.**

Fla., Tampa—HOMES—Clair-Mel Builders, Inc., 4002 Swann St., plans by L. Sheftall, Clark Bldg., 305 Main St., Jacksonville, 100 frame homes on concrete slab. **$500,000.**

Ill., Bloomington — HOSPITAL — Bd. Trustees Menonite Church, Brokaw Hospital, general hospital. **$929,000.**

●**Ind., Fort Wayne**—HOUSING—Village Ranch Homes, Inc., McKinnie Ave. and Allerton Blvd., 216 dwelling unit, 1 story, irregular shaped, masonry, wood, housing. **$1,512,000.** Paul Cripe, 504 Lemcke Bldg., Indianapolis, consult. engr.

●**Ind., Gary**—HOUSING—Tri City Village, Inc., 1300 Broadway, 382 dwelling unit, 1 and 2 story, masonry, frame housing. **$2,000,000.** Paul Cripe, 504 Lemcke Bldg., Indianapolis, consult. engr.

Kan., Mission—CHURCH—Mission Methodist Church, Mission, church addn. **$275,000.**

Mass., Andover — GYMNASIUM — Phillips Academy, Salem St., plans by Egger & Higgins, 542 5 Ave., New York, N. Y., brick, steel, concrete modern gymnasium. **$250,000.**

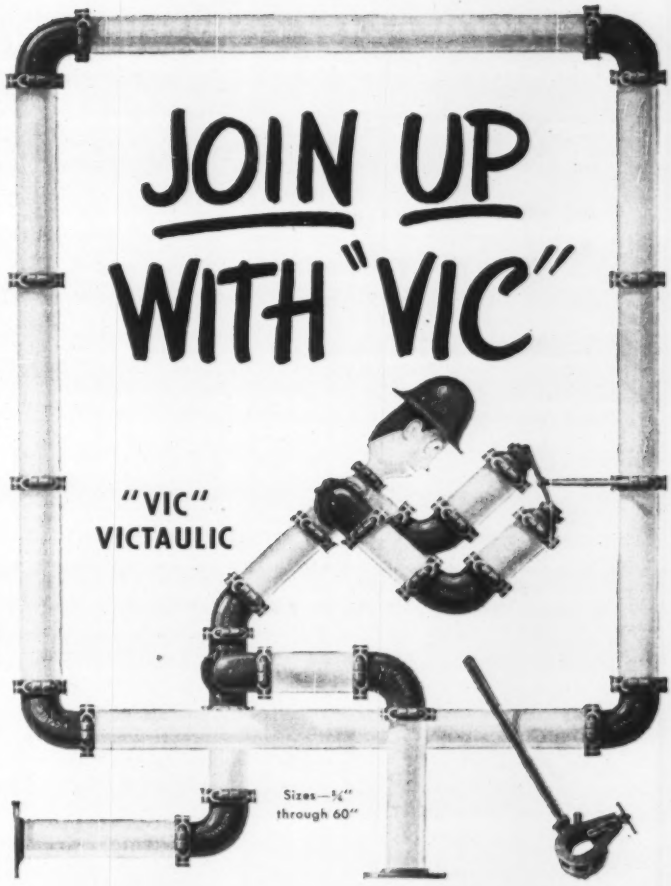
Mass., Boston—SCHOOL—Bryant & Stratton Commercial School of Boston, 334 Boylston St., plans by Sidney F. Hooper, 16 Court St., 4 story, bsmnt., 80x80 ft., brick, steel school addns., alterations. **$300,000.**

Mass., Taunton—CHURCH—St. Anthony's R. C. Parish, M. J. Texeira, pastor, School St., plans by Wendell Phillips, 98 Congress St., Milford, 2 story, bsmnt., brick, steel church, School St. **$350,000.**

Mass., Westfield—CHURCH—Westfield Episcopal Parish Church of Atonement, Rev. P. T. Shultz, pastor, Westfield, plans by Arland A. Dirland, 673 Boylston St., Boston, 1 story, bsmnt., brick, stone church, Court and Pleasant Sts. **$250,000.**

Mich., Albion—HOSPITAL—Sheldon Memorial Hospital, c/o Chalth, Hinchman & Grylls, Inc., archt., 800 Marquette Bldg., Detroit, 50 bed masonry, concrete hospital addn. **$350,000.** CD 12/23/48.

Minn., Austin—SCHOOL, etc.—St. Augustine R. C. Parish, Rev. F. A. McCarthy, 18-room high school addn. or new high school or gymnasium conversion into 12 classrooms, and new gymnasium. **$500,000.**



For a *permanent* solution to your piping problems . . . you can't beat VICTAULIC Couplings, Victaulic Full-Flow Elbows, Tees and other Fittings.

Yes, sir! The COMPLETE Victaulic Line is designed to give you speedy, dependable piping construction . . . AND save you lots of extra work . . . many extra dollars!

A simple two-bolt design for quick, easy hook-ups . . . only a Standard T-Wrench needed to make connections . . . long-lasting, positive-locked joints that will stand up under extreme pressure, vacuum, or strain conditions . . . THAT'S WHAT "VIC" OFFERS YOU!

AND AS FOR FITTING THOSE PIPE ENDS . . . It's easy! "Vic-Groover" grooves 'em automatically in half the time of a conventional pipe threader! Write today for these two:

Victaulic Catalog and Engineering Manual No. 44. "Vic-Groover" Catalog No. VG-47.

VICTAULIC COMPANY OF AMERICA
30 Rockefeller Plaza, New York 20, N. Y.

Victaulic Inc., 727 W. 7th St., Los Angeles 14, Calif.
Victaulic Company of Canada, Ltd., 200 Bay Street, Toronto 1
For Export outside U.S. & Canada: PIPECO Couplings & Fittings; Pipe Couplings, Inc., 30 Rockefeller Plaza, New York 20, N.Y.

26TH VICTAULIC YEAR

Copyright 1950, by Victaulic Co. of America

The easiest way to make ends meet
VICTAULIC
PIPE COUPLINGS AND FITTINGS

For *LOW COST FAST* CONSTRUCTION

Steeline means VALUE

ALL STEEL BUILDINGS

Check these Advantages —

- Complete "packaged" building from one source cuts construction cost and time.
- Quality material used throughout. Structural steel frame work, heavy galvanized roof and side covering.
- All steel construction for fire safety, long life and low maintenance.
- Standard designs for buildings and accessories are flexible to meet most requirements.
- Good delivery—we will generally have all material on your property by the time foundation and floor have been completed.

Roof Systems for Masonry Wall Construction Also Available

I am interested in more information on:

(a) Steeline All-Steel Buildings
(b) Steeline Roof Systems For Masonry Wall Construction

☐ Width.....
☐ Length.....
☐ Height.....

Name .....

Company .....

Address .....

CAREW STEEL PRODUCTS CORPORATION YORK, PENNA.

BAILEY METERS AND CONTROLLERS

FOR SEWAGE TREATMENT AND WATER SUPPLY . . .

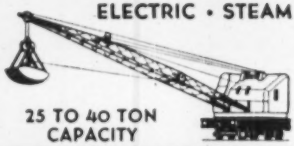
BAILEY METERS

● Venturi Tubes, Weirs, Flumes, Nozzles and other primary elements; Mechanically and Electrically operated Registers and Complete Automatic Control Systems.

BAILEY METER COMPANY
1029 IVANHOE ROAD • CLEVELAND, O.
Bailey Meter Co. Ltd., Montreal, Canada

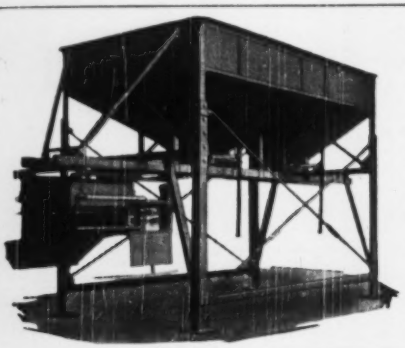
OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO



Winslow BINANBATCH —Reduces Your Job Cost

Use with a

10S-11S-14S-16S Mixer

Complete—with scale for two or three aggregates.
With two or three overhead storage bins.
For use on culvert—bridge—curbing—foundation jobs.
Wherever above size mixers are in operation
Prompt Delivery - Write or Wire

Mftd. by

WINSLOW SCALE CO.
TERRE HAUTE, IND.
Distributors Located throughout U. S.

●**Minn., Fort Snelling (Br. St. Paul)**—HOUSING—Dpt. Army, Fifth Army, 305 Federal Office Bldg., Third and Washington Aves. S., Minneapolis, military housing proj. of 29 apartments. **$3,000,000.** Private sponsor will finance, construct and manage.

Minn., Madison—HOME—Lutheran Old Peoples Home, Madison, plans by Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, 3 story, ground floor, 35x146 ft. stone, old peoples home addn. Approx. **$350,000.**

Minn., Owatonna—OFFICE—Mutual Implement & Hardware Insurance Co., Owatonna, plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, 3 story, 70 x 100 ft. brick, bldg. addn. Approx. **$250,000.**

Miss., Natchez—RESIDENCES—Pharasalia Corp., c/o Beverly Martin, archt., Natchez, residential development. Approx. **$300,000.**

Neb., Omaha—OFFICE—Cudahy Packing Co., 221 N. La Salle St., Chicago, Ill., office. **$500,000.**

●**N. J., Fort Monmouth (Br. Red Bank)**—HOUSING—Dpt. Army, Fort Monmouth, 600 housing units 3 to 5 rooms for military personnel, brick apartment houses, Pine Brook Rd., in Camp Wood Area. **$5,000,000.** Private sponsor to construct, manage and finance project.

●**N. Y., Brooklyn**—APARTMENT—Clarendon Gardens, Inc., 16 Court St., Zone 2, plans by Oscar I. Silverstone, 153 Pierrepont St., Zone 2, ten 2 and 3 story apartments, 5522-66 Avenue D and 5403-53 Kings Hy. **$3,405,000.**

N. Y., Brooklyn—APARTMENT—P. M. L. Co., 16 Court St., New York, Zone 2, plans by Arthur Weiser, 240 Madison Ave., New York, Zone 16, 6 story apartment, 18-40 89 St. **$650,000.**

N. Y., Flushing—APARTMENT—Coral Gardens, Inc., c/o Kaxy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, 6 story apartment, Sanford Ave. and Parsons Blvd. **$588,000.**

●**N. Y., New York**—OFFICE—161 William St. Corp., 30 John St., Zone 5, plans by Sylvan Blen, 565 Fifth Ave., Zone 17, office bldg., 65-67 Ann St. **$2,600,000.** CD 5/13.

N. Y., New York—SCHOOL—Immaculate Conception Roman Catholic Church, 754 Gun Hill Rd., plans by Anthony J. DePace, 151 W. 46 St., Zone 19, 3 story school, Gun Hill Rd. and Wallace Ave. **$750,000.**

●**N. Y., Queens Village**—APARTMENT—United Veterans Mutual Housing Co., c/o William M. Dowling, archt., 320 Fifth Ave., New York, Zone 18, 18 two story apartments in area bounded by Hillside Ave., Braddock Ave. and Billings St. **$3,000,000.**

O., Shaker Heights—APARTMENT—Shaker Coventry Apartments, 13700 Shaker Blvd., plans by Joseph Ceruti, 7113 Euclid Ave., Cleveland, 2 steel frame apartments, Shaker and Coventry Rds. **$550,000.**

Pa., Meadville—HOME for AGED—Methodist Erie Conference, Inc., 707 Sassafras St., Erie, plans by Duane, Lyman & Assoc., 506 Delaware Ave., Buffalo, N. Y., 2 story, basmt., brick or stone Methodist Home for the Aged. **$500,000.** CD 9/23.

●**Pa., Phila.**—HOUSING—The Housing & Home Finance Agency, 3701 N. Broad St., housing, Pennypack Woods. Approx. **$1,000,000.** Herbert F. Fagher, c/o owner, engr.

Pa., Phila.—CHURCH etc.—Messiah Lutheran Church, 16 and Jefferson Sts., plans by Harry G. Stewart, 117 S. 17 St., church and community center. **$500,000.** CD 11/15/48.

●**Pa., Secane**—SHOPPING CENTER—Penn Fruit Co., 919 Chestnut St., Phila., plans by The Ballinger Co., 121 N. Broad St., Phila., shopping center. **$1,000,000.**

Tenn., Memphis—GYMNASIUM—Southwestern College at Memphis, plans by Hibbs, Parrent & Hall, Nashville Trust Bldg., Nashville, gymnasium. **$700,000.**

Tex., Dallas—HOTEL—Ervington Hotel Co., 1200 S. Ervay St., 124 room masonry hotel addn. 4 story addn. to existing 6 story hotel. **$650,000.**

●**Tex., Dallas**—RADIO BROADCASTING and OFFICE—Liberty Broadcasting Sys., c/o KLIF Station, R. B. McLendon, Towers Hotel, plans by Raymond F. Smith, 2009½ Jackson St., 10 story, basmt., steel radio broadcasting and office, concrete fdn., 500 ft. steel television tower of top bldg. **$1,000,000.**

Tex., Fort Worth—HOUSING—O'Neal & Foster, 5009 James Ave., low cost housing. **$275,000.**

Tex., Houston—DWELLINGS—J. P. Boone, 4320 Alief Rd., 16 dwellings, Childress St. **$250,000;** 24 dwellings in Oak Estates. **$455,000.**

Tex., Houston—DWELLINGS—R. E. Boyker & Jack V. Vest, 2780 Robinhood St., 40 dwellings, concrete slab fdn. off Avenue B (immediate constr.). **$425,000;** 35 dwellings, concrete slab fdn., off Pine St. (later constr.), **$375,000.**

●**Tex., Houston**—HOUSING—The Pleasantville Corp., c/o Lloyd & Morgan, archt., 4605 Montrose Blvd., 197 Negro housing units for total 41 wood frame bldgs., concrete slab fdn. **$1,000,000.**

Tex., Houston—DWELLINGS—Security Lumber Co., 7106 Long Dr., 52 dwellings, near Port Arthur-Houston Hy., **$375,000;** 22 dwellings, off Market St. Rd., **$250,000** both near Jacinto City.

●**Tex., Houston**—DWELLINGS—Southland Investment Co., 7106 Long Dr., 166 dwellings, in Houston Ship channel area. **$1,100,000.**

Tex., McAllen—HOUSING—Suttle Constr. Co., McAllen, ranch-type housing, concrete slab fdn. **$375,000.**

Tex., Midland—APARTMENT—Commercial Constr. Co., Midland, 27x154 ft. frame, stucco apartment, concrete slab fdn. **$280,000.**

Tex., Midland—HOUSING—James K. Royce, Midland, frame housing. **$250,000.**

Tex., Mission—DWELLINGS—Highland Park Homes, Inc., Mission, plans by B. L. Shannon, c/o owner, 50 dwellings. **$375,000.**

Tex., Odessa—APARTMENT—Roger Ashford, 213 W. 3 St., plans by Construction Design Service, Bewley Bldg., Fort Worth, brick veneer apartment. **$250,000.**

Tex., Rankin—HOUSING—Morris S. Ware, 1401 N. Whitaker St., Midland, 42 unit frame type housing, concrete slab fdn. **$264,000.**

●**Tex., San Antonio**—APARTMENT—Sidney M. Stewart, 1413 Majestic Bldg., 16 stucco on metal lath apartments, concrete slab fdn. **$1,200,000.**

●**Wash., Tacoma**—APARTMENT—P. A. Hungate, Tacoma Medical Center, Tacoma, plans by Miller & Ahlson, 807 4 Ave., Seattle, Zone 4, 15 story, rein.-con. Park Towers apartment. **$1,-150,000.**

Wash., Yakima—HOSPITAL—Yakima Valley Osteopathic Assn., Yakima, hospital. **$258,-000.**

Wyo., Laramie—SCHOOL—St. Lawrence O'Tooles Catholic Church, Laramie, parochial grade school. **$250,000.**

Wyo., Rock Springs—SCHOOL—Our Lady of Sorrows Parish, Rock Springs, North Side Parochial School. **$250,000.**

●**Ont., Cornwall**—HOSPITAL—Religious Hospitallers of St. Joseph, Cornwall, 3, 5 and 6 story, 250-bed hospital, McConnell Ave. between Fifth and Sixth Sts. Approx **$2,500,000.**

●**Ont., Woodroffe (Postal Dist. Ottawa)**—DWELLINGS—R. A. S. Bruce, Hardy Arcade, Spark St., Ottawa, 250 dwellings. **$1,250,000.**

Que., St. Robert—CHURCH—Parish of St. Robert, Rev. E. Larocque, cure, reconstr. church. Approx. **$250,000.**

INDUSTRIAL BUILDINGS

Fla., Jacksonville—PLANT—Salerno-Megowen Biscuit Co., 4500 W. Division St., Chicago, Ill., mfg. plant. **$250,000.**

Idaho, Boise—TERMINAL FACILITIES—Utah Oil Refining Co., Utah Oil Bldg., Salt Lake City, Utah, terminal facilities. **$250,000.**

Idaho, Lincoln—PLANT—Utah-Idaho Sugar Co., Lincoln, sugar processing plant addn. **$350,000.**

Ind., South Bend—FACTORY, etc.—Studebaker Co., Sample St., 1 story, 46x80 ft. and 160x425 ft. factory addn. and machine shop exten., 1 story, 47x160 ft. masonry, structural steel, concrete receiving dock. **$255,000.** Wm. E. Fett, 914 Washington St., Mishawaka, consult. engr.

La., New Orleans—TERMINAL—Gordon's Transportation, 3900 Short St., truck terminal, **$100,000.**

Mass., Lowell—WAREHOUSE—Wamesitt Supply Co., 631 Dutton St., plans by Ralph Rankin, 228 Blue Hill Parkway, Milton, 2 story, 65x190 ft., brick, steel, concrete warehouse, Dutton St. **$145,000.**

●**Mich., Alpena**—KILNS, etc.—Huron Portland Cement Co., Robert B. Kiemann, Ford Bldg., 601 Griswold St., Detroit, 2 kilns, incl. waste-heat boilers, coolers, dust precipitators and coal mills, rein.-con., structural steel, etc. Several millions.

Mich., Detroit—WAREHOUSE—Davison Bros., Inc., c/o. Charles N. Agree, archt., 1,440 Book Tower, 1 story, 325x375 ft., masonry, concrete, structural steel warehouse. **$500,-000.**

N. J., Bridgeton—PLANT—Martin Dyeing & Finishing Co., Bridgeton, plans by George Laub, 2123 Delancy St., Phila., Pa., dye works plant. **$100,000.**

N. Y., Brooklyn—STORAGE—Joseph Schlitz Brewing Co., 193 Melrose St., Zone 6, plans by Harold S. Ellington, c/o owner, 5 story beer storage bldg., 16-44 George St. **$954,000.**

Pa., Glen Riddle—PLANT—Sunroe Refrigeration Co., Pennell Rd., rebuild mfg. plant. **$500,000.**

Tex., Galveston—WHARF STORAGE and WAREHOUSE — Galveston Wharves, 2324 Strand St., 50,000 sq. ft. wharf storage, **$290,-000;** 40,000 sq. ft. warehouse, **$275,000.** Lipton Tea Co., lessee. E. H. Thronton, Sr., c/o

●**Tex., Houston**—CHEMICAL PLANT—Stauffer Chemical Co., 420 Lexington Ave., New York N. Y., and c/o Marvin Haschke, M & M Bldg., chemical plant, Hempstead Rd. and 12 St. **$1,500,000.**

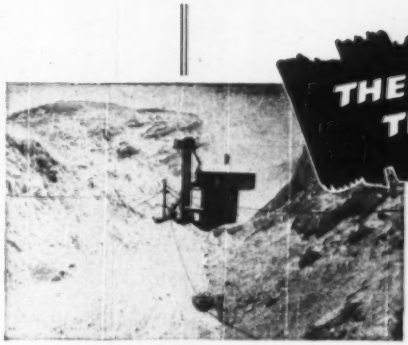
Utah, Salt Lake City—WAREHOUSE, etc.—Utah Oil Refining Co., Utah Oil Bldg., warehouse and storehouse. **$300,000.**

Va., Staunton—WAREHOUSE, etc.—Hajoca Corp., 31 and Walnut Sts., Phila., Pa., warehouse and office. **$100,000.** A. A. Sadley, c/o owner, engr.

●**Wis., Superior**—GRINDING PLANT—Huron Portland Cement Co., R. B. Kilemann's office, Ford Bldg., 601 Griswold St., Detroit, Mich., grinding plant, storage silos and loading equip. Several millions.

Ont., Toronto—PLANT, etc.—British Oxygen Canada, Ltd., south of Homer Ave., Etobicoke Twp., two plant structures and office. Aprox. **$200,000.**

Ont., Woodmount—WAREHOUSE—R. Simpson Co., Ltd., 176 Yonge St., Toronto.



THE TOUGHER THE JOB------

THE MORE YOU NEED SAUERMAN EXCAVATORS!

Story Behind the Picture

A 2 cu. yd. 500 ft. span Sauerman Power Scraper mines sandstone for the Nevada Silica Sands, Inc. Because the material is non-caving, the digging path of the scraper bucket must be changed frequently, so the tail end is arranged for automatic rapid shifting. A third drum on the 75 h.p. Sauerman scraper hoist controls the shifting. Average capacity of this machine, digging and hauling from center of pit, is 54 tons an hour.

Difficult dig-and-haul jobs are reduced to simple terms by using a Sauerman Cableway or Scraper Machine. Sound, experienced engineering has produced rugged, economical, flexible equipment that is in a class by itself for tough long haul excavating work.

The Sauerman Slackline Cableway is designed for digging deep in any kind of ground—wet or dry, loose or hard-packed—and lifting to the top of a screening plant or similar high delivery point. The Sauerman Power Scraper is used for a variety of earthmoving and stockpiling jobs, ranging in capacity from a few hundred to many thousand cubic yards a day.

Either machine can be operated by one easily trained man. Upkeep is simple; initial cost low. Power requirements, electric, gasoline or Diesel, are small on basis of tonnage handled.

WRITE TODAY FOR CATALOG

SAUERMAN BROS. Inc. 532 S. Clinton St. Chicago 7, Ill.

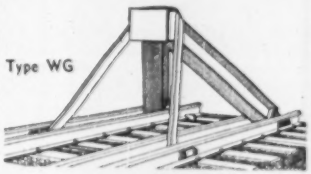
McKIERNAN-TERRY JOB-PROVED

PILE HAMMERS

McKiernan-Terry Pile Hammers are job-proved and time-tested . . . the choice of engineers and contractors on major construction projects throughout the world. Available in a standardized line of 10 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Write for free Bulletin.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
13 Park Row New York 7, N. Y.



When a bumping post is knocked out don't simply say "they hit it too hard" and let it go at that. Your investigation will lead you to use Hayes Posts, designed by engineers for engineers. Hayes has led since 1903 in safety devices for railway side tracks; Bumping Posts, Cushion Wheel Stops and Derails.

●

Hayes Track Appliance Co.
110 N 3rd St., Richmond, Indiana

"GUNITE"

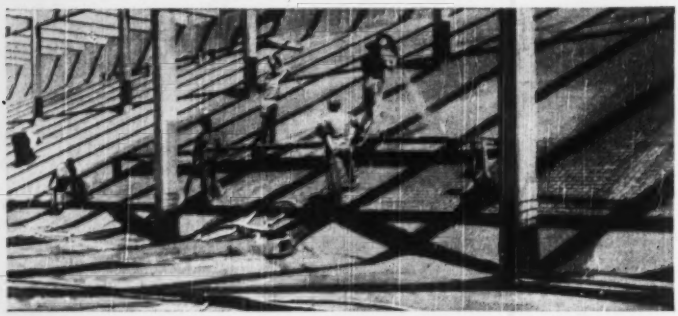
NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Experienced Personnel
Write for our new 48 page Bulletin

PRESSURE CONCRETE CO.
Gunite Contractors and Engineers
193 Emmett Street So. Court Street
Newark 5, New Jersey Florence, Alabama
33 N. LaSalle St., Chicago 2, Ill.

"GUNITE" Selected to Repair Reservoir



When the old, open Ballou Park Reservoir at Danville, Va., was improved and covered in 1948, excessive leakage of the old brick lining was stopped with reinforced "GUNITE". The photo shows details of the process. After concrete columns to support the roof were placed, wire mesh reinforcing was laid and the entire reservoir was "GUNITED". Note that the reinforcing and "GUNITE" were carried over the column footings and up the columns approximately three feet to prevent leaking at those points.

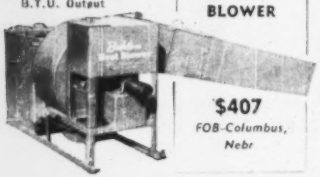
The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin A2400. We will gladly send a copy at your request. On your letterhead, please.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

NEW! Heating Unit for Winter Jobs

- Ideal for Concrete Work
- Quickly Thaws Out Materials
- Over One Million B.T.U. Output

BEHLEN HEAT BLOWER



$407
FOB-Columbus, Nebr

A sturdy, dependable heating plant. Has many construction uses. Recommended for concrete work in low temperatures. Warms aggregate at batching plant; prevents freezing concrete while setting. Just the thing for drying and curing plaster or paint and other such jobs. Preheats machinery. Burns 1 to 9 gals. distillate or kerosene an hour; furnishes up to 1,100,000 B.T.U.'s direct heat per hour. Built-in fan delivers up to 7,000 CFM at ½ inch water pressure or 5,000 CFM at 5 inches pressure up to 250° F output. Gasoline or electric motor furnished if desired. Adjustable outlet pipe is removable for adapting to fit job. Mounted on skids. Used on Federal and private construction. Almost 3,000 in use on farms dehydrating corn. Beat cold weather delays . . . write, wire for full information . . .

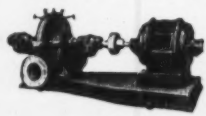
BEHLEN MANUFACTURING COMPANY
DEPT. 3 COLUMBUS, NEBR.

DRILLING
ANYWHERE

We look into the earth

PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

ERIE
DOUBLE SUCTION
TYPE S
CENTRIFUGAL PUMPS



BELT MOTOR OR ENGINE DRIVE

Sizes from 2" to 12"
Write for Bulletin No. 38
ERIE PUMP & ENGINE WORKS
152 Glenwood Ave. Medina, N. Y.

plans by F. S. Corley, c/o owner, warehouse, Wilson Ave. **$150,000.**

UNCLASSIFIED

Calif., Los Angeles—SWIMMING POOL, etc.—City, 60x150 ft. swimming pool and bath house, Figueroa Ave. and L Sts., Wilmington Area, **$100,000.** Ralph Brooks, Central Bldg., Monrovia, consult. engr.

●†**D. C., Wash.**—FAIR—National Capitol Sesquicentennial Comm., District Bldg., plans by Bryne Organization 2607 Connecticut Ave. N.W., Freedom Fair, incl. Federal Bldg., Hall of States Industry-Labor Group, Pan American Center, United Nations Bldg., recreation area, in Anacostia Park at East Capitol St. and Anacostia River and Memorial Amphitheatre (permanent construction) in Rock Creek Park, **$15,000,000.**

●**Fla., Tampa** — BEACH DEVELOPMENT — City, plans by Ivo A. De Minicis, 608 Tampa St., municipal bathing beach development, **$1,000,000.**

Ind., Fort Wayne—TOURIST CAMP—Tourinns, Inc., 60 E. 42 St., New York, N. Y., plans by M. G. Duncan, 207 Harwood Blvd., Scarsdale, N. Y., 1 story, 24x44 ft. guest unit; 2 story, 52x89 ft. administration bldg.; 1 story, brick, wood, concrete, filling station, near here, **$250,000.**

Iowa — RURAL DISTRIBUTION LINES — Clarke Electric Co-operative, Osceola, rural distr. lines, Clarke Co., **$195,000.** Ralph Kilkeny, Osceola, consult. engr. CD 1/3/47.

Ia., Davenport—STADIUM—City, City Hall, North Brady St. Stadium imprvs., extens. **$150,000.**

●**Ky., Louisville**—STADIUM, etc.—State Fair Bd., Commonwealth of Ky., McDowell Bldg., plans by Fred Elswick, Heyburn Bldg., bowl and stadium, race track, grand stand, 3 other bldgs., **$3,500,000.** CD 12/27/48.

Ky., Richmond—DRIVE-IN THEATRE—Cumberland View, Inc., c/o Dr. O. F. Hume & Shelton Saufley, Richmond, 400-car drive-in theatre, Berea Rd. about 4 mi. south of here. Approx. **$100,000.**

Md., Baltimore — SWIMMING POOL — City, Bureau Bldg. Constr., 410 Municipal Bldg., Druid Hill Park Negro Swimming Pool imprvs., addns., filtration and chlorination plant, **$200,000.** James Posey, 10 E. Pleasant St., mech. engr. Saxe, Willar & Robertson, 130 W. Hamilton St., structural engrs. K. E. L. Williams, 410 Municipal Bldg., bldg. constr. engr. CD 2/7/45.

O., Cleveland—SWIMMING POOL—City, City Hall, swimming pool, incl. razing old bathhouse in Edgewater Park, **$500,000.**

Pa., Dixmont — ELECTRICAL DISTRIBUTION SYS.—General State Auth., 18 and Herr Sts., Harrisburg, electrical distr. sys. at Dixmont State Hospital, **$125,000.** J. E. Burke & Assoc., Magee Bldg., Pittsburgh. A. F. Jones, c/o owner, ch. engr. CD 6/14, under Public Buildings.

Pa., Kutztown—STAIR TOWERS—General State Auth., 18 and Herr Sts., Harrisburg, plans by Muhlenburg Bros., 113-A, S. 4 St., Reading, stair towers in Bldgs. A, B, D, and E at Kutztown State Teachers College, **$165,000.** A. F. Jones, c/o owner, ch. engr., CD 12/12.

Pa., West Chester — ELECTRICAL REPAIRS, etc.—General State Auth., 18 and Herr Sts., Harrisburg, electrical repairs to men's dormitory, **$58,000;** electrical repairs and fire alarm systems, **$97,000.** Leslie S. Tarleton, 1500 Walnut St., Phila., consult. engr.; plans by Douglas M. Hiam, Phoenixville, fireproof stair towers in Freshmen Hall, **$66,000,** all at West Chester State Teachers College. A. F. Jones, c/o owner, ch. engr. CD 12/9.

South Carolina — RURAL DISTRIBUTION LINE—South Carolina Power Co., Box 352, Charleston, 110,000 volt transmission line between Yemassee and Fairfax, **$260,000.**

Texas — RURAL DISTRIBUTION LINES — Bandera Electric Co-operative, Inc., Bandera, 50 mi. rural distr. lines, sys. imprvs., 39 mi. tie-lines, completing previously approved constr., Bandera Co., **$470,000.**

Texas—RURAL DISTRIBUTION LINES—Fayette Electric Co-operative, LaGrange, rural distr. lines, Fayette Co. **$115,200.**

Tex., Freeport — DOCKS — Brazos River Harbor Navigation Bd., Freeport, docks **$350,000.**

●**Tex., Houston** — DRIVE-IN THEATRES — Claude Ezell & Assoc., 2031 Jackson St., drive-in theatres. Proj. No. 1, Old Spanish Trail area, **$250,000;** Proj. 2, Westmoreland Farms area, **$250,000;** Proj. 3, Clinton Dr.-E. Houston area, **$250,000;** Proj. 4, Humble Rd. area, **$250,000.**

Tex., Lubbock—SWIMMING POOL—City, voted bonds, rein.-con. swimming pool, **$100,000.** CD 11/28.

Man., Winnipeg—COMMUNITY CENTRE—St. John's High Community Center Com., c/o City Clk., community center, **$200,000.**

N. S., Truro—RINK—Community Centre Com., c/o His Honor the Mayor, Truro, rink, **$100,000.**

Ont., Hamilton—SWIMMING POOL—Municipality, defeated bonds swimming pool at Dalewood School, **$210,000.** W. R. Souter & Assoc., 36 James St., Hamilton, archts. W. L. McFaine, city engr. CD 10/24.

Ont., New Toronto—ARENA—Lake Shore Lions Club, Dr. C. O. Lennox, chn., New Toronto, ratepayers voted against Memorial arena on Birmingham St., **$200,000.** Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 11/29.

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Ark., Conway—B. A 1/10—City, water distr. sys. $37,000. Plans deposit $25. Marion L. Crist & Assoc., Union Life Bldg., Little Rock, engrs.

Neb., Omaha—B.A. 1/10—Metropolitan Utilities Dist., 18 and Harney Sts., furnishing, erecting 2 m. & elevated steel water tank, 70 Ave. and Parker St. $300,000. J. C. Detweiler, c/o owner, water engr. CD 4/26/48.

Ont., Toronto—B.A 1/10—Stone & Webster Eng. Corp., engrs., 299 Eastern Ave., water tank, for Lever Brothers Ltd., 299 Eastern Ave. Approx. $39,000.

Ill., Hume—B. A. 1/12—Village, Village Hall, WW sys. incl wells, 50,000 gal elevated steel tank, 22 fire hydrants, valves, fittings, 6,000 lin. ft. Type K copper pipe, 9,500 lin. ft. ¾ in. c.c. pipe, 42,040 lin. ft. 2- to 6-in. watermains. Caldwell-Rhoads Co., Jacksonville, engr.

Tex., Galveston—B.A 1/12—Galveston Co. Water Control & Imprv. Dist. 1, Courthouse, WW. $40,000. Plans deposit $15., Joe J. Rady, 811 American Fidelity Bldg., Fort Worth, engr.

La., Lockport—B.A. 1/13—Town, Town Hall, WW. imprvs. Plans deposit $20. Extended date, B. H. McCrary Eng. corp., 22 Marietta St. Bldg., Atlanta, Ga., engr. CD 7/28

Tex., Dallas—B.A. 1/13—Dallas County-Park City Water Control & Imprvt. Dist. 2, Courthouse, WW imprvs., extens., $30,000. Powell & Powell, 501 Thomas Bldg., engrs. CD 5/2.

Tenn., Chapel Hill—B.A 1/15—City, deep wells, etc. Plans deposit $5. C. N. Harrub Eng. Co., 148-B 4th Ave., Nashville, engr.

✦N. M., Las Cruces—B. A. 1/17—U. S. Eng., P. O. Box 1538, Albuquerque, production water well, White Sands Proving Ground, PB P-911G, Serial No. Eng-29-005-50-28. Plans deposit $10.

N. Y., New York—B.A. 1/17—Bd. Water Supply, 120 Wall St., completing construction Downsville Dam of Pepacton Reservoir and constructing waste weir, weir channel and waste channel of that reservoir, release water chamber and tunnel and appurtenances of these structures, incl. closure of the existing diversion tunnel and final grading in vicinity of the dam, near the Village of Downsville, Town of Colchester, Delaware Co., Contr. 401. Plans deposit $5. CD 7/19/46.

Calif., El Segundo—B.A. 1/18—City Council 202 Richmond Ave., 3 m.g. rein.-con. reservoir, pump house, pipelines, appurtenances. Approx. $28,000. Plans deposit $50. Lippincott & Rowe, 714 W. Olympic St., engrs.

Tex., Beaumont—Bids Asked—Ayrshire Corp., 6825 Academy St., Houston, waterlines. $35,000. Wilson, Morris & Crain, 3330 Graustark, Houston, proj. archts.

LOW BIDDERS

Ga., East Point—City, Dec. 19, raw water supply line, from Rapid Transfer & Constr. Co., 289 Whiteford St. N E., Atlanta, **$66,170.** CD 12/8.

Md., Hyattaville — Washington Suburban Sanitary Comn., Hamilton St., Dec. 19, watermains and clay sewers, Gregory Estates, Contr. 661 W&S, from Ahl Bros. Inc. and Myrtle Sts. N.W., Wash., D. C., **$39,207**; watermains, sewers for Northwest Park Apts. 2 and 3, Contr. 671 W&S, from Leo Butler Co., 8416 Georgia Ave., Silver Spring, **$32,257.** CD 12/15.

✦N. M., Las Cruces—U. S. Eng., P. O. Box 1538, Albuquerque, rejected bids Dec. 14, production water well, White Sands Proving ground, P. G. 7-911G, Serial No. Eng 29-005-50-20. $30,000. Will re-advertise. CD 11/23.

Ore., Portland—Rockwood Water Dist., 18230 S. E. Stark St., Dec. 20, 200,000 gal. steel water tank, from Pittsburgh Des Moines Steel Co., 518 1st South St., Seattle Wash., **$31,189**; furnishing, installing 11,000 ft. mostly 12 in. water pipe, from Coast Constr. Co., Junction City, **$42,630.** CD 12/12.

✦Pa., Chester—Chester Municipal Auth., 5 and Welsh Sts., Chester, Dec. 15, water transmission main from Octoraro Lake to Harrison Hill Reservoir, in Lancaster, Chester and Delaware Counties, furnishing, installing transmission line in 4 sections, supplying pipe, large line, from Lock Joint Pipe Co., Box 269, East Orange, N. J., **$3,067,268***** installing pipe, large line, from Atlantic Constr. Co., Inc., 15 Oakland Ave., Harrison, N. Y., **$2,053,-470***** installing smaller pipe from 3 of 4 sections, from Charles F. Smith & Sons, 118 Shirea Dr., Dayton, **$263,630, $439,745** and **$707,747***** installing 4th sect., smaller pipe, from C. Salvatore & Son, 330 High St., Orange, N. J., Joseph Miele Constr. Co., 2261 Millburn Ave., Maplewood, N. J., Frank Nero, Inc., 250 Mechanic St., Red Bank, N. J., and Nappi-Greeco Contg. Co., 241 Riverside Ave., Newark, N. J., total bid **$453,207.** CD 11/16.

S. C., Camden—City, Dec. 15, WW imprvs., Sect. 2, from Chicago Bridge & Iron Co., Healey Bldg., Atlanta, Ga., **$46,400.** CD 12/2.

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, Dec. 16, 17,200 lin. ft. 6 in. c.i. WW., from Wilks, Dake & Steed, Gladewater Hy., Tyler, **$31,210.** Est. $35,000. C. K. Leighton, c/o owner, college constr. engr.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Dec. 20, 30 in. c.i. waterline, Jefferson, Van Buren, Center St., in Oak Cliff, etc., Sect. A, from E. H. Reeder, 2128 Hawes St., **$151,880**; Sect. B-2, from Lancaster & Love, 9051½ W. Jefferson St., **$66,397.**

Tex., Fort Worth—City, City Hall, Dec. 19, Contr. 1, West Side Water Supply Main, from Lancaster & Love and W. R. West, 3115 S. Adams St., **$125,520.** Est. $135,000. CD 11/30.

Tex., Fort Worth—City, W. O. Jones, mgr., Dec. 22, Lake Worth intake for WW, from Texas Constr. Co., 505 N. Erway St., Dallas, **$135,058.** CD 12/5.

Tex., Houston—City, City Hall, 900 Brazos St., Dec. 21, 60x22 ft. rein.-con. pumping plant, rein.-con. fdn. for 600,000 gal. steel tank and tower at Municipal Airport, from Chicago Bridge & Iron Co., National Standard Bldg., **$116,790,** est. $106,000; 5,500 water meters and installation, from Rockwell Mfg. Co., 1102 Delano St., **$111,440,** est. $116,700. Bids 12/20.

CONTRACTS AWARDED

Okla., Ada—City, 500,000 gal. elevated water storage tank, to Chicago Bridge & Iron Co., 232 S. Michigan Ave., Chicago, Ill., **$91,235,** est. $100,000; laying 15 mi. waterlines, fittings, to B. & M. Constr. Corp., Petroleum Bldg., Oklahoma City, Zone 2, **$51,907,** est. $65,000. Awarded 12/20. CD 3/24.

Tex., Corpus Christi—City, City Hall, 16 in. waterline from S. Staples St. along Doddridge and Almeda Sts., **$41,116;** 16 in. waterline from overhead storage tank along Alameda and Roberts to Gaines Rd., **$30,503,** force account. Robert L. Otto, c/o owner, city engr. CD 12/3/48.

Tex., Corpus Christi—Orville W. Eastland, Jones Bldg., c.i. waterlines, to C. L. Castor, 801 Ohio St., Approx. **$55,000.** Frank Drought, 127 W. Pecan St., San Antonio, engr.

Tex., Houston—Jack V. Vest & R. E. Boyker, 4015 Case St., Bellaire, c.i. waterlines, to Mischer-Harris Co., 5141 Leeland St. Approx **$35,000.**

Tex., Mercedes—City, City Hall, addnl. waterlines, force account. Approx. **$48,000.** A. Tamm, Hartlingen, engr. CD 12/24/45.

Tex., Wichita Falls—City, City Hall, WW filter unit, day labor. Approx. **$29,000.** John Ruhmann, c/o owner city engr. CD 12/14.

●Ont., Hawkesbury—Canadian International Paper Co., Sun Life Bldg., Montreal, Que., filter bldg., sedimentation basins, underground mixing tanks, etc., at plant, to E. G. M. Cape & Co., Ltd., 620 Cathcart St., Montreal, Que. Approx. **$1,000,000.** Surveyor, Nenninger & Chenevert, 14440 St. Catherine St. W., Montreal, Que., engrs.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Md., Hyattaville—B.A. 1/9—Washington Suburban Sanitary Comn., Hamilton St., approx. 235 ft. to 54 in. sewers, 355 ft. 36 in. R.C.C.P. and 2,315 ft. 36 in. R.C.C.P.X. sewers, Northeast Branch Trunk Sewer from Lincoln Ave., Riverdale to Paint Branch, Hyattsville and Berwyn Dists. Contr. 12-S. Plans deposit $5 adv. ENR 1/5. CD 10/10, under Water Supply.

January 10

✦Me., Togus—Veterans Admin., Wash. 25, D. C., sewage treatment plant for Veterans Admin. Center, Proj. 14-029. Spec. 4961.

Ark., Searcy—B. A. 1/12—City, constr. extens., modifications sewerage sys. $50,000. Plans deposit $5. Kenneth Lefever, Gazette Bldg., Little Rock, engr.

Tex., Lubbock—B.A 1/12—City, Div. H, sewage treatment plant addns. $550,000. H. N. Roberts & Assoc., 1310 Avenue Q, engrs. CD 12/20.

January 16

Ind., Warsaw—City, City Hall, disposal plant (activated sludge-diffuse air). Plans deposit $25. D. H. Lessig Engineers, 110½ E. Center St., engrs. CD 10/28.

Tex., Edna—B.A. 1/16—City, sewage disposal plant. $200,000. Glenn H. Eychbrock, 7634 Thurow St., Houston, engr. CD 11/23.

Ore., Oceanlake—B. A. 1/18—City, City Hall, sewage treatment plant. Plans deposit $20. Ernest Nelson, Builders Exchange Bldg., Portland, engr.

Tex., Beaumont — Bids Asked — Ayrshire Corp., 6825 Academy St., Houston, drainage, sanitary sewers. $50,000. Wilson Morris & Crain, 3330 Graustark St., Houston, proj. archts.

LOW BIDDERS

Calif., Capitola—Santa Cruz Co. Sanitation Dist., City Hall, Dec. 20, vitr. clay sewers, from A. J. Peters & Son, 534 Stockton Ave., San Jose, **$57,706.**

Md. Towson—Comrs. Baltimore Co., Court House, Dec. 19, Contr. 129-S, approx. 7,864 lin. ft. 24- to 30-in. VCPX Dead Run Interceptor Sewer, Dead Run, from Philip D'Adamo Constr. Corp., 5014 Resiterstown Rd., Baltimore, **$146,492.** CD 12/9.

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, Dec. 16, 12,500 lin. ft. 8, 6 and 4 in. sewers and misc. related items, from Wilks, Dake & Steed, Gladewater Hy., Tyler, **$22,067,** materials by owners, **$30,000,** total $52,067. Est. $50,000. C. K. Leighton, c/o college constr. engr.

Tex., Houston—City, City Hall, 900 Brazos St., Dec. 21, storm sewers Berkley Sec. Unit 1, from Hartwell Constr. Co., 5801 Bueluw St. **$103,057.** Est. $138,000. R. W. Lee, c/o owner, city engr.

Tex., Thorndale—City, Dec. 22, sanitary sewer collection sys. and disposal plant from Mitchell Darby Constr. Co., P. O. Box 479, Pharr, and Clyde Hays, Box 786, Waco, **$48,-454,** some materials by owners, **$7,000,** total $55,454. Est. $53,000. CD 11/29.

Wash., Spokane—City, City Hall, Div. F, the Chestnut St. section of intecepting sewer, 1 mi. 6 ft. diam. tunnel from Valley Constr. Co., 5708 Rainier Ave., Seattle **$589,395.** Est. $536,750. CD 12/5.

CONTRACTS AWARDED

Conn., Waterbury—City, Bd. P. Wks., City Hall, sewage plant, treatment facilities, equip., to F. H. McGraw Co., 74 Windsor St., Hartford, **$824,282.** Bids 12/9. CD 12/20, under LB.

●Ga., Atlanta—City, incinerator plant addn. to Standard Constr. Co., 15 11 St., Columbus, **$1,292,900.** Bids 11/14. CD 11/18, under LB.

Md., Baltimore — City, City Hall, approx. 13,400 lin. ft. 24-to 36-in. c.i. sewers, Contr. 381, to Frank Angelozzi, 123 S. High St., **$487,426.** Bids 11/30. CD 12/7, under LB.

Okla., Sallisaw—City, City Hall, sewage disposal plant, to H. J. Happel Constr. Co., 5501 E. Admiral St., Tulsa, **$117,648,** est. $130,000; sanitary sewer mains, to Worth James, Pyramid Bldg., Little Rock, Ark., **$68,036** est. $100,000. Bids 12/15, awarded 12/17. CD 12/6.

Tex., Corpus Christi—Orville W. Eastland, Jones Bldg., sanitary and storm sewers, to C. L. Castor, 801 Ohio St., **$65,000.** Frank Drought, 117 W. Pecan St., San Antonio, engr.

Tex., Houston—Jack V. Vest & R. E. Boyker, 4015 Case St., Bellaire, sanitary sewers, drainage, to Mischer-Harris Co., 5141 Leeland St. **$62,000.**

Tex., Mercedes—City, City Hall, sanitary sewer force account. Approx. **$58,000.** Awarded 12/5. A. Tamm, Harlingen, engr. CD 12/24/45.

Tex., Sweetwater—J. C. & Guy Morris, Sweetwater, sanitary and storm sewers, own forces, **$55,000.**

Wash., Spokane—City, City Hall, sub trunk sewer in Boulevard Park, Roman Ave., to C. A. Power, P. O. Box 1220, Spokane, **$55,691.** Bids 12/8. CD 6/14/46.

Wis., Milwaukee—Town, 7200 N. Green Bay Ave., Zone 9, vitr. clay sanitary sewers in various streets, to Geo. Carlson Co., 4041 N. Montreal St., Zone 9, **$53,086.** Bids 12/1, awarded 12/15.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

January 11	**January 13**
Texas	**Kentucky**
January 12	**January 20**
Nebraska	**Pennsylvania**
New Hampshire and Vermont	**January 26**
New Jersey	**California**

LOW BIDDERS

✦California—U. S. Eng., 180 New Montgomery St., San Francisco, Dec. 20, superstructure of Fruitvale Ave. Railroad Bridge at Oakland Harbor, Oakland, Alameda Co., Spec. 04-203-28, from Judson-Pacific Murphy Corp., 430 Eastshore Hy., Emeryville, **$407,786.**

Indiana—State Hy. Comn., Indianapolis, Dec. 20, 1 span 30 ft. rein.-con. girder bridge over Robinson's Ditch, 0.39 mi. approach grading, c. conc paving, east of Sedalia, Clinton Co., from J. L. Wilson, Bloomfield, **$75,950,** est. $162. Dec**** 1 span 150 ft. rein.-con. arch bridge, 28 ft. roadway, two 2 ft. walks, no piling over Killbuck Creek, 0.047 mi. approach grading and c. conc. paving, north of State Rte. 32, Rural Dist., Madison Co., from J. F. Sweet, Cambridge City, **$69,556,** est. $86,165**** 2 spans 44 ft. rein.-con. girder, continuous steel beam bridge, precast concrete, untreated timber piling over Anderson River, 0.383 mi. approach grading and c. conc. paving, 28 ft. roadway, west of Troy, Spencer and Perry Counties, from Ryan Constr. Co., 304 Court Bldg., Evansville, **$176,-065,** est. $238,149. CD 11/30.

Iowa—State Hy. Comn., Ames, Dec. 20, 320 ft. x 22 ft. continuous I-beam bridge with two 40 ft. x 22 ft., I-beam approach spans on local road over North Raccoon River in Sect. 2-81-29 S-871 (1), Dallas Co., from Iowa Bridge Co., Des Moines, **$84,964.** CD 12/7.

●Washington—State Hy. Dpt., Olympia, Dec. 20, first unit of rein.-con. Alaskan Way Viaduct, King Co., from MacRae Bros., 2733 4 Ave. S., Seattle, **$1,193,912.** CD 12/2.

CONTRACTS AWARDED

Georgia—State Hy. Dpt., Atlanta, repairing superstructure Turtle River Bridge on State Route 25 between Brunswick and Woodbine, SAP-MIN-1791-A (5), Glynn Co., F. Z. S. Hood, Lafayette, **$146,589.** Bids 12/16. Awarded 12/20. CD 12/2.

●**Maryland** — State Rds. Comn., Baltimore, superstructure Severn River Bridge, Anne Arundel Co., to Harris Structural Steel Co., 419 4 Ave., New York, N. Y., **$1,925,000**; Patuxent River Bridge at Benedict, connecting Charles and Calvert Counties, to Diamond Constr. Co., 14 and M Sts. S. E., Wash., D. C., **$1,742,743.** Bids 12/20. CD 12/28, under LB.

Oregon — State Hy. Comn., Salem, wid'n. bridge over Umatilla River on Columbia River Hy., Umatilla Co., to Archie R. Averill, Builders Exchange Bldg., Portland, **$94,340.** Bids 12/19. CD 12/9.

Oregon — State Hy. Comn., Salem, replace timber truss and trestle with steel truss and rein.-con. approach on Coast Fork Willamette River bridge 2½ mi. east of Goshen of Willamette Hy., FAP F-308 (4), Lane Co., ot Hamilton & Thomas, Eugene, **$150,000.** Bids 12/20. CD 12/9.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

January 10	**January 19**
Maryland	**California**
January 11	**January 20**
Louisiana	**Alabama**
January 13	**Pennsylvania**
Kentucky	**January 26**
Pennsylvania	**California**

Calif., Los Angeles—B. A. 1/17—Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. 3.600 ft. Myrtle and Calgrove Ave., C. C. O-665, $50,000. C. E. Arnold, co. engr.

●**Fla., Cocoa**—B.A. 1/25—U. S. Eng., 575 Riverside Ave., Jacksonville, Zone 16, constr. roads, parking areas and launching pad, joint long range proving ground, Serial No. Eng-08-123-50-3.

Tex., Pasadena—B.A. 1/31—City, rein.-con. paving from Tartet St. to Red Bluff St., on Jackson and Thomas Ave. $90,000. George H. Smith, Jr., city manager, city engr.

Tex., Beaumont—Bids Asked—Ayrshire Corp., 8825 Academy St., Houston, grading, street constr., paving, $50,000. Wilson, Morris & Crain, 3330 Graustark St., Houston, proj. archts.

LOW BIDDERS

California — State Div. Hys., Los Angeles, Dec. 22, b. conc. on cement treated base, new 2-lane roadway parallel to existing roadway, plant mix on untreated rock base outer highways on each side, exten. bridge over Coyote Creek and constr. 3 rein.-con. slab bridges parallel to existing bridge on Santa Ana Parkway between Rosecrans Ave and Orange Co. line, Los Angeles, Los Angeles Co., from Peter Kiewit Sons Co., 3 Sycamore Ave., Arcadia **$677,249;** b. conc. on cement treated base and existing pavement 1.9 mi. Oxnard Blvd. between north city limits and south city limits of Oxnard, Ventura Co., from Baker & Pollock, 29 N. Olive St., Ventura, **$287,** CD 6/11/48.

Colorado—State Hy. Dpt., Denver, Dec. 20, grading, structures surf. 6.314 mi. State Hy. 13 from point approx. 6 mi. north of Rifle and exten. to Rifle Creek inside the town of Rifle, Garfield Co. from Schmidt Constr. Co., Grand Junction, **$286,238.** Est. $323,949.

Kentucky—State Dpt. Hys., Frankfort, rejected bids Nov. 4, reconstr. and traffic bound surf., 4.649 mi., RS 45-351, Kehoe-Lowder School Rd., Greenup Co., L.B. **$110,682;** reconstr. and traffic bound surf., 9.34 mi., RS 92-424 Sandefur Crossing Rd., Ohio Co., L.B. **$178,836;** reconstr. and traffic bound surf., 11.336 mi., RS 17-402 Cresswell-Enon-Fredonia Rd., Caldwell Co., L.B. **$79,823.** CD 11/10.

Maryland — State Rds. Comn., Baltimore, grading, drainage, wid'n. 5.001 mi. sections roadway and grading, drainage and surf. several relocations State Rte 27, beginning southern limits of Westminster and exten. southerly toward Taylorsville, Contr. CL-314-315, Carroll Co., from Thomas Bennett & Hunter, Inc., Westminster, **$116,328;** grading drainage, wid'n resurf. 3.918 mi. sections roadway and grading, drainage, surf. several relocations State Rte 414, beginning at Gordon's Corner and exten. southwesterly to Wash.-Indian Head Rd., Prince Georges Co., from F. P. Asher, Jr. & Sons, Wst Extens., Annapolis, **$373,634.** CD 12/7.

●**New Mexico**—State Hy. Dpt., Santa Fe, grading, minor drainage structures, 2 multiple concrete box culverts over 20 ft. clear span each, watering, rolling, ballast, leveling course, bit. top course surf. etc. 10.374 mi. U. S. Hy. Route 70-80 between Lordsburg and Deming, FAP No. FI-134 (3), Grant and Luna Counties, and grading, minor drainage structures, 1 multiple concrete box culvert over 20 ft. clear span, watering, rolling, ballast, leveling course, bit. top course, etc. 10.279 mi. U. S. Route 70-80 between Lordsburg and Deming, FAP No. FI-134 (2), Hidalgo and Grant Counties, from Skousen-Hise Contg. Co., 207 Springer Bldg., Albuquerque, **$153,383** and **$161,682** respectively ***grading, minor drainage structures, 2 multiple concrete box culverts over 20 ft. clear span each, 158.1 ft. concrete, steel bridge, watering, rolling, ballast, leveling course, bit. top course surf., etc. 3.431 mi. FAP No. FI-5 (4), Quay Co., to D. D. Skousen, 201 Springer Bldg., Albuquerque, **$216,749*****grading, minor drainage structures, 56 ft. multiple concrete box culvert, water and rolling, ballast, leveling course, bit. top course surf., etc. 2.87 mi. U. S. Hy. Route 85 between Las Vegas and Romeroville, **FAP** No. FI-152 (6), San Miguel Co., to Floyd Haake, 1201 Sierra Vista St., Santa Fe, **$184,501.** Grand total $1,348,315. Bids 12/21. Awarded 12/21. CD 12/13.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Dec. 20, grading, STBC, bit. surf. tr. or sand asph. surf. course 13.4 mi. Part 1, Red Oak to Drake, Part 2, from point 0.7 mi. west of Pittmans Store, W. 3.37 mi., Part 3, from Salem west–to N.C. 43 at Wrights Station, Proj. No. 4-9-37-203, Nash Co., from Exum-Cline Constr. Co., Box 1021, Rocky Mount, **$91,128,** est. $100,000-$125,000***added material, bit. surf. tr. or sand asph. or b conc. surf. 18.2 mi. Part 1, from N.C. 42 at Williamsons Store west to N.C. 581 at Bullocks School, Part 2, from U. S. 301 at Aycocks X- Roads north through Moores X- Roads to N.C. 42, Part 3, from end pavement between Scotts Church and Lamms X- Roads, west through Moores X- Roads to N.C. 581, Proj No. 4-9-40-292, Wilson Co., from Dickerson, Inc., Box 391, Monroe, **$156,501,** est. $175,000-$200,000***traffic bound macad., or PCSBC, bit. surf. tr. 6.14 mi county road from N.C. 18 at Kings Creek, northwest to N.C. 268, over Yadkin River, Proj. No 8-9-69-202, Caldwell Co., from A. R. Thompson Contractor, Inc., 219 N. Main St., Rutherfordton, **$112,674,** est. $125,000-$150,000***traffic bound macad. or PCSBC, bit. surf. tr. 4.4 mi from point 1 mi. north of Hays, N. C., on Hays-Traphill Rd. to Dockery Post Office, Proj. No. 8-9-75-201, Wilkes Co., from Lavender Bros., Earl, **$99,-135,** est. $100,000-$125,000. CD 12/12.

Oregon—State Hy. Comn., Salem, Dec. 20, grading, paving 5.72 mi., furnish 5,000 cu. yd. crushed material for Pumping Plant Hill-Ontario Sec. Old Oregon Trail Hy., FAP F-158 (6), Malheur Co., from C. E. Leseburg, Nyssa, **$198,187;** grading, surf., oiling 2.91 mi. Scott Canyon Sec. Dayton-Grayson County Road, FAPS-93(1), Sherman Co., from George C. Corliss, Ontario, **$75,467.** CD 12/9.

Texas—State Hy. Comn., Austin, cancelled bids to have been opened Jan. 10, 10.447 mi. Hy. FM 535, Control No. 807-1-2, FP No. S 436 (2), Bastrop Co. CD 12/22.

Texas—State Hy. Comn., Austin, cancelled bids to have been opened Jan. 10, single asph. tr. 9.49 mi. Hy. FM 1027 and 571, Control No. 1239-1-2, R 1239-1-3, and FP No. S 1209 (2) and S 1001 (2), Eastland Co.; imprv. 1.311 mi. Hy. U. S. 75, Control No. 47-7-12, FP No. U 515 (8), Dallas Co. CD 12/22.

Texas—State Hy. Comn., Austin, cancelled bids to have been opened Jan. 11, 7.572 mi. Hy. FM 987, Control No. 1217-2-1, FP No. S 1237 (1)***12.562 mi. Hy. FM 386, Control No. 577-4-3 and R 577-4-4, FP No. S 431 (4), Llano Co.***1.158 mi. Hy. FM 1062, Control No. 1246-2-1, FP No. S 1334 (1), Randall Co. CD 12/22.

CONTRACTS AWARDED

Calif., San Carlos—City, City Hall, imprv. streets in Oak Park tract, Res. 1949-52, by I. C. Smith, 1 and Railroad Sts., San Mateo, **$88,377.** Awarded 12/14 Edwin H. Smith, 898 Chestnut St., Redwood City, engr.

●**Georgia**—State Hy. Dpt., Atlanta, to Woodward-Lentz Constr. Co., Cedartown, grading, paving 7.768 mi. Calhoun Rd., beginning in Calhoun and exten. east toward Ranger S-08 7 (1), Gordon Co. **$154,967;** grading, paving 5.69 mi. Siloam-Union Point Rd., State Route 77 beginning at end present pavement and ending at State Route 13 in Union Point S-899 (3), Greene Co., **$109,655;** grading, paving 8.156 mi. Covington-Loganville Rd., State Route 81, beginning in Oxford at end of present pavement and ending in Walnut Grove, SACP-11-1 (2), Newton and Walton Counties, **$107,376***** to Coffee Constr. Co., Eastman, grading, paving 5.902 mi. Tyrone-Fairburn Rd., State Route 74, beginning at end of present pavement at Fayette-Fulton Co. line and exten. to point approx. 0.5 mi. south of Tyrone, S 1057 (1), Fayette Co., **$69,026;** grading, paving, 3 bridges 10.33 mi. Dublin-Glennwood Rd. beginning approx. 9.15 mi. south of Dublin and ending at Laurens-Wheeler Co. line, F-143 (5), Laurens Co., **$235,827;** grading, paving 4.878 mi. Talbottom-Waverly Hall Rd., beginning at end of present pavement in Talbottom and extend toward Waverly Hall. S-6734 (1), Talbot Co., **$85,118*****to R. T. Smith, 215 Church St., Decatur, grading, paving 9.813 mi. Carnesville-Toccoa Rd. beginning at junction with Sta. Route 48 north at Carnesville and ending at intersection with FAS Route 901 south of Toccoa at end of present pavement S-6889 (1), Franklin and Stephens Counties, **$141,906;** bridge 4.866 mi. grading, paving at Yellow River on Conyers-Lagrange State Route 20, beginning at end of present paving north of Conyers and exten. toward Loganville, S 6869 (1), Rockdale Co., **$163,980.**

To W. L. Florence Constr. Co., Powder Springs, grading, paving 3.539 mi. Franklin-Lowdon Rd. State Route 106, beginning at Heard-Carroll Co. line and exten. north to intersection with State Route 5, S 9737 (1), Carroll Co., **$52,998*****to Lothridge Bros., Gainesville, grading, surf. 4.226 mi. Waleska-Royal Rd. State Route 160 beginning approx. 0.2 mi. east of Bartow Co. line and exten. toward Waleska, S-6825 (1), Cherokee Co., **$93,300*****to Sloan Constr. Co., Greenville, S. C., Contr. 1, garding, paving, bridge 1.343 mi. at Oconee River on relocation of Athens-Watkinsville Rd., beginning approx. 1.8 mi. south of Athens City limits and exten. north to intersection with Whitehall Rd. S 9225 (1), Clarke Co., **$95,618*****to McMeekin Constr. Co., Cheraw, S. C., Contr. 2, above project, **$78,821*****to W. L. Cobb Constr. Co., Masonic Temple, Decatur, 3.045 mi. grading, paving bridge over Flatt Creek on Lula-Brookton Rd., beginning at intersection with State Route 11 and exten. toward Lula, S-1238 (1), Hall Co., **$97,631*****to Georgia-Alabama Paving Co., Columbus, wid'n., resurf bridge 7.931 mi. at Mountain Creek on Chipley-Hamilton Rd. beginning in Chipley at junction of State Rte. 1 and 10 and ending in Hamilton F-011-1 (1), Harris Co., **$328,806.**

To Hugh Steele Centre, grading, paving, bridge 5.754 mi. Hampton Locust Grove Rd., beginning at junction of FAS Route 070 east of Hampton and exten. to intersection with State Route 155, S-1577 (1), Henry Co., **$80,494*****to E. M. Beckham Constr. Co., Perry, grading, paving, bridge 1.969 mi. at Kinchafoonee Creek on Armena-Leesburg Rd. beginning at State Route 3 in Leesburg and exten. toward Armena, S-1182 (1), Lee Co., **$90,000*****to Clarence C. Jones, Jesup, grading 4.952 mi. Ludowici-Eulonia Rd beginning at end of present pavement approx. 4.2 mi. southeast of Ludowici and exten. toward Eulonia S-01612(1), Long Co., **$79,736*****to Wright Contg. Co., Columbus, wid'n. shoulders and drainage extens. 13.299 mi. Darien-Midway Rd. State Route 25, beginning at north city limits of Darien and exten. to point approx. 2 mi. north of Eulonia F1-177 (6), McIntosh Co., **$147,422*****to M. J. Carroll Contg. Co., Leesburg, Fla., wid'n. resurf. 2 bridges 1.345 mi. Tennga-Chatsworth Rd. beginning approx. 1.9 mi. north of Chatsworth and exten. toward Tennka F-018-1 (2), Ct. 2, Murray Co., **$149,-621*****to R. A. Bowen, Macon, grading, paving, 4 bridges 5.911 mi. Blackshear-Baxley Rd., beginning at State Rd. 32 in Bristol and exten. north toward Baxley F-073-2(1), Pierce and Appling Counties, Contr 1, **$185,445*****to H. M. Pafford, Jr., Waycross, Contr. 2, above project, **$169,196*****to J. G. Attaway Constr. Co., Statesboro, grading, paving, bridge 7.433 mi. at Beards Creek on Glenville to State Route 63 Rd., State Route 155 beginning at end of present pavement in Glenville and exten. east S-1579 (1), Tatnall and Long Counties, **$204,403.** Grand total $2,921,-427. Bids 12/20. CD 12/13.

●**Maryland**—State Rds. Comn., Baltimore, 3.1 mi. dual hy. between Washington and Woods Corner Prince Georges Co., to Rea Constr. Co., Pineville Rd., Charlotte, N. C., **$873,073.** Bids 12/20. CD 12/28, under LB.

New Jersey—State Hy. Dpt., Trenton, constr. 0.323 mi. Routes 5 and 6 Connection from Fifth St. at E. Homestead Ave. to Route 5, vicinity of Grantwood Blvd. Overpass, Palisades Park Boro, Bergen Co., to Mitchell Constr. Co., New Milford, **$76,391;** approach paving 0.645 mi. service station sites on Route 4 Parkway Sects. 4 G and 7E, Woodbridge and Clark Twps., Middlesex and Union Counties, to Villa Contg. Co., Westfield, **$203,320.** Bids 12/22. CD 12/1.

●**New York**—Bureau Contracts & Accounts, Albany, paving 6.94 mi. Route 17, southeastward from Elmira, Chemung Co., to Potter-DeWitt Corp., Pavilion, **$1,414,929.** Bids 11/22. CD 11/30, under LB.

Okla., Britton—City, c. conc. paving 23 blocks residence streets, to Boecking Constr. Co., Bethany, **$71,482.** Est. $72,400. Kenneth Kieffke, 2908 Jensen St., Zone 6, engr.

Okla., Oklahoma City—City, City Hall, c. conc. paving in Street Imprvt. Dist. 1105, to Banta Constr. Co 1646 W. Main St. **$53,832.** Est. $55,000. Awarded 12/20. CD 12/6.

Oregon—State Hy. Comn., Salem, surf., oiling 5.44 mi., furnish 2,000 cu. yd. crushed material for Horse Ranch Creek Sec. Eugene Secondary Hy. FAP S-234 (6), Lane Co., to Acme Constr. Co., Eugene, **$73,955*****surf., bit. macad. 5.7 mi. Kings Valley-Read Creek Sect. Kings Valley Secondary Hy FAP S-38 (3), Benton Co. to J. R. Taggart, Salem, **$94,414*****16,030 cu. yd. crushed rock for Whiskey Creek-East Forest Boundary rock production proj. Klamath Falls-Lakeview Hy., Klamath and Lake Counties, to Berndt Constr. Co., Vancouver, Wash. **$48,000.** Grand total $218,419 Bids 12/20. CD 12/9.

Oregon—State Hy. Comn., Salem, grading, surf., oiling 5.44 mi., furnish 1,700 cu yd. crushed rock for West unit, Hamilton-Long Creek sect. of Kimberly-Long Creek Secondary FAP S-260 (3), Grant Co., to Swanson Constr. Co., Salem **$136,433*****grading, surf., oiling 10.9 mi., furnish 3,300 cu. yd. crushed materials for Lawen-Crane sect. of Furns-Crane Hy., FAP S-48 (2), Harney Co., to C. E. Leseburg, Nyssa, **$131,265*****surf., oiling 17.91 mi., furnish 1,800 cu. yd. crushed materials for Chiloquin-Sprague River sect. of Sprague River Rd., Klamath Co., to J. N. & M. J. Conley, 4332 N.E Royal Court, Portland, **$123,048*****pavement resurf. 7.11 mi., furnish 6,400 cu. yds. crushed rock for Jordan Creek-McNamara Camp sect. of Wilson River Hy., FAP F-191 (10), Tillamook Co., to Warren Northwest Co., Box 5072, Portland, **$123,605.** Grand total $514,151. Bids 12/9. CD 12/1.

South Dakota—State Hy. Comn., Pierre, grading 10.114 mi. F 95 (16), Faulk Co., to S. E. Gustafson Constr. Co., 7 Lacotah Bldg., Sioux Falls, **$69,286*****service gravel 12.008 mi. S 439 (2) and S 469 (3), Clay and Turner Counties to J. G. Beckman Constr. Co., Sioux Falls, **$111,915*****base course 9.594 mi. FAS 182 (6), Buffalo Co., from C. A. Wagner Constr. Co., 230 E. 8 St., Sioux Falls, **$137,193*****base course 17.401 mi. FAS 260 (12), Hughes and Hyde Counties, to G. H. Lindeke Sons, Spencer, **$192,363.** Grand total $511,213. Bids 12/13. CD 12/1.

Tex., Corpus Christi—Nueces Co., Courthouse, road and street imprvs and seal coating 9 mi. roads, Precinct 2, to Allison &

Jones, Port Aransas, **$56,662.** Est. $59,862. Bids 10/21. CD 10/12.

Tex., Corpus Christi—Orville W. Eastland, Jones Bldg., road and street constr; and asph. paving, to C. L. Castor, 801 Ohio St., Approx. **$55,000.** Frank Drought, 117 W. Pecan St., San Antonio, engr.

Tex., Greenville—Hunt Co., Courthouse, Unit 2, farm-to-market road constr., force account. **$278,000.** CD 8/8.

Tex., Houston—Jack V. Vest & R. E. Boyker, 4015 Case St., Bellaire, reinf.-con. paving, off Avenue B and Pine St., to Mischer-Harris Co., 5141 Leeland St., Approx. **$55,000.**

Tex., Sweetwater—J. C. & Guy Morris, Sweetwater, street constr. and paving, own forces. Approx. **$60,000.**

†Washington—Bureau Pub. Roads, Dpt. Commerce, Morgan Bldg., Portland, Ore., grading, surf., oiling 3 mi. of Lake Chelan Hy., 10 mi. northwest of Lakeside, Chelan Co., to Wm. & John T. Fusco Constr. Co., 3225 No. 30 St., Tacoma, **$89,543.** CD 12/12.

Washington—State Hy. Dpt., Olympia, grading, draining, surf. 8.249 mi. State Hys. 2, 7 and 10 and 2-F, Coulee City vicinity, Douglas and Grant Counties, to F.R. Hewett, Parkwater, **$369,068***** mfg., stockpiling crushed stone surf., ballast and mineral aggregate on Primary State Hy. 8, Goldendale north, Klickitat Co., to H. G. Johnson, Imperial Hotel, Portland, Ore., **$97,700***** bit. 8.143 mi. Secondary State Hy. 4-C, Grant Co. line to Hesseltine, FAS S-0251 (1), Lincoln Co., to Berke Bros., 7923 N.E. Halsey St., Portland, Ore., **$641,010***** surf., stockpiling 2.04 mi. State Hys. 3 and 3-H, Oakesdale to Tekoa and Garfield vicinity, Whitman Co., to J. A. Bryant, Lewiston, Idaho, **$107,125.** Grand total $1,214,-963. Bids 12/20, awarded 12/20. CD 12/8.

●†Alaska—Alaska Road Comn., Juneau, grading, bit. surf. 44.35 mi. Glenn Hy. and 43 mi. Glenn Hy., to Rogers Constr. Co., & Babler Bros., 2046 N.E. Union St., Portland, Ore., **$1,223,057** and **$1,465,025**, respectively. Bids 12/5. CD 12/13, under LB.

Wash., Wenatchee—Chelan Co., Courthouse, grading, surf., oiling 3,017 mi. 25-Mile Creek Rd., to Goodfellow Bros., Wenatchee, **$91,-935.** D. B. West, co. engr. CD 2/24/44.

EARTHWORK, WATERWORKS

BIDS ASKED

†New York—B. A. 1/10—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md., Whitney Point Reservoir clearing, Otselic River, Whitney Point, Serial No CIV-ENG-18-020-50-12. CD 12/13.

†Louisiana—B. A. 1/11—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, approx. 8,450 lin. ft. standard board revetment, located on and adjacent to left desbending bank of Red River, Mile 315. 0 (1930) in Bossier Parish, about 5 mi. above Bossier City, CIV-ENG 16-047-50-178.

B. C., Samoose Bay—B. A. 1/11—J. M. Somerville, secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater. Approx. $88,000. Plans deposit $20. R. Blais, c/o owner, engr.

N. S., Halifax—B. A. 1/11—J. M. Somerville, secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont, breakwater repairs. Approx. $45,000. Plans deposit $10. R. Blais, c/o owner, engr. CD 7/15/48.

†Minnesota—B. A. After 1/11—U. S. Eng., 1217 Post Office Bldg., St. Paul, Zone 1, Red Lake River Channel Imprvt., Stage No. 3, deepening, widening, straightening about 5 mi. channel upstream from Stage No. 2, about 580,000 cu. yd. excav., low overflow channel dam, etc. Approx. $28,000. CD 4/21/44.

January 17

†Arkansas—U. S. Eng., 300 Broadway, Little Rock, powerhouse and switchyard, White River Watershed Bull Shoals Dam Power Development, White River, Serial No. CIVENG-63-050-50-41. Extended date. CD 11/4.

†Idaho—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Emmett, 3 outdoor transformers for special heating service for Black Canyon Dam, Boise Proj., Spec. 2858. L. N. McClellan, eh. engr.

†Oregon—U. S. Eng., Pittock Block, Portland, design, manufacture, delivery at Gates, four assemblies of outlet gates, appurtenances for Detroit Dam, Marion Co., CIVENG-35-026-50-182.

†Texas—B. A. 1/17—U. S. Eng., 606 Santa Fe Bldg., Galveston, dredging, Gulf intracoastal Waterway in Laguna Madre, between Corpus Christi and Mud Flats, Inv. No. CIVENG-41-243-50-134. Nueces, Kleberg and Kenedy Counties. **$140,000.**

Tex., Robert Lee—B. A. 1/17—Upper Colorado River Auth., c/o C. C. Allen, secy., Robert Lee, reservoir dam on Mountain Creek, incl. 120,000 cu. yd. earthen combination core trench and dam embankment. $60,000. Plans deposit $25. Parkhill, Smith & Cooper, 1006, 14 St., Lubbock, engrs.

†Washington—B. A. 1/17—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, excavation intake channel and relocation State Hy., Chief Joseph Dam, Serial No. CIVENG 45-108-50-40. Bid date changed. CD 12/16.

January 17

†Alaska—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., dredging Wrangell Narrows, CIVENG-45-108-50-35. Extended date. CD 11/9.

●†California—B. A. 1/18—U. S. Eng., 751 S. Figueroa St., Los Angeles, Los Angeles River Improvement Whitsett to Fulton Aves., bridge and paving. CIVENG 04-353. $1,400,000. CD 1/25/45.

†Washington—B. A. 1/18—U. S. Eng., 4735 E. Marginal Way Seattle, Zone 4, excavation of powerhouse intake channel at Chief Joseph Dam, site and relocation 1.21 mi. State Hy. 10-E, adjoining the channel, Bridgeport, CIV-ENG-45-108-50-40. CD 9/12/44.

LOW BIDDERS

†Arkansas — U. S. Eng., 300 Broadway, Little Rock, construct Lot V, and Lot VI in Point Remove Drainage & Levee Dist. near Morrilton, Conway Co. Serial No. CIVENG-62-050-50-46, from D. B. Hill, 819 Parker St., Little Rock, **$177,024,** est. $110,927 and **$155,050,** est. $173,502 respectively. CD 12/2.

†Connecticut—U. S. Eng., Bldg. 21, Naval Drydock, South Boston, Mass. Dec. 16, dredging Clinton Harbor, Serial No. CIVENG-19-016-50-25, from Hagle Hydraulic Dredging Co., Grove Beach, Clinton, **$52,000.** CD 12/2.

†Florida—U. S. Eng., P. O. Box 4970, Jacksonville, cancelled bids to have been opened Dec. 28, emergency flood control section of channel of Etonia Creek, Rice Creek Basin, Inv. No. CIVENG-08-123-50-40. CD 11/30.

†Illinois—U. S. Eng., 826 U. S. Courthouse & Custom House, 1114 Market St., St. Louis 1, Mo., Dec. 21, levees Grand Tower Drainage and Levee Dist., Proj. Items II-B (1) and II-B (2), Jackson Co., CIVENG-23-065-50-44, from S. W. Hardwick, Beardstown, Item II-B (1), **$150,235,** est. $143,820; Item II-B (2), **$116,655** est. $122,538. CD 12/8.

†Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, Dec. 15, pile dike constr., Red River, Boyce, Rapides Parish, CIVENG 16-047-50-138, from Hough Cougar & Co., Inc., 329 N. Fort St., St. Louis, Mo., **$49,948.** CD 11/28.

†Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, Dec. 16, excavating approx. 6,000,000 cu. yd. material for channel imprv. between White Lake and Vermillion Bay, CIVENG 16-047-50-139, from McWilliams Dredging Co., 860 St. Charles St., New Orleans, **$748,410.** CD 12/2.

●†Montana—Bureau of Reclamation, Dpt. Interior, Columbia Falls, Dec. 26, clearing part of Hungry Horse Reservoir Site, Schedules 1 and 3, (6,840 acres) from Wilson & Crowe, Inc., Redding, Calif., **$1,446,850;** Schedules 2, 4, and 5, (7,855 acres) from J. H. Trisdale, Redding, Calif. **$2,484,360.** Est. $6,231,850. CD 12/6.

†Nebraska—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, Dec. 16, underseepage control in Florence Lake area, Inv. 91 from Layne-Western Co., 4430 Commercial Ave., **$54,163.** Est. $63,617. CD 11/22.

†Nebraska—U. S. Eng., 1709 Jackson St., Omaha, Dec. 21, remove overburden at Queen Hill Quarry, near Plattsmouth, Inv. No. CIVENG-25-066-50-100, from Roberts Constr. Co., 1018 Trust Bldg., Lincoln, **$60,418.** Est. $88,556. CD 12/7.

†Oregon—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., cancelled bids to have been opened Dec. 22, 14 permanent houses at McNary Lock and Dam on Columbia River, Umatilla Co. CIVENG-45-164-50-53. CD 12/13, under Public Bldgs.

†Pa., Phila.—U. S. Eng., 121 N. Broad St., Zone 1, Bids 12/30, maintenance dredging Delaware River adjoining piers at U. S. Eng. Reservation at Fort Mifflin, approx. 9 mi. downstream from Phila.-Camden Bridge, from Amercian Dredging Co., 12 S. 12 St., Zone 7, **$35,520.** CD 12/5.

Tenn., Memphis—City, City Hall, Dec. 14, drainage imprvs. from L. & R. R. to Dalton St., from J. H. Hard Constr. Co., 2484 Southern Ave., **$94,998.** CD 10/5/44.

†Tex., Roma — International Boundary & Water Comn., c/o Fort McIntosh, Laredo, cancelled bids to have been opened Dec. 19, Sect. 1, clearing 330 acres for Falcon Dam, **$40,000;** Sect. 3, chopping 250 acres for Falcon Dam Proj., **$35,000.** Sect. 2, clearing and grubbing 105 acres for Falcon Dam Proj., near here, from H. B. Zachry Co., P. O. Box 2570, San Antonio, **$16,788,** est. $30,000. CD 12/6.

CONTRACTS AWARDED

Tex., Baytown—Humble Oil & Refining Co., Humble Bldg., site work, grading, concrete curbs, gutters, sidewalks, parking area paving, sanitary and storm sewers, etc. waterlines to Tellepsen Constr. Co., 1710 Telephone Rd., Houston, **$116,285.** Est. $150,000. Bids 9/3, awarded 12/14. CD 8/30.

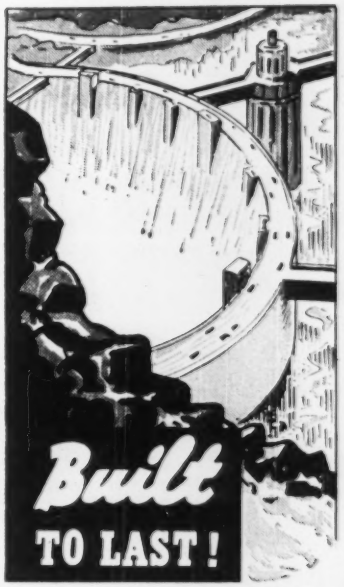
†Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, levee protection for Putallup River, CIVENG-45-108-50-34, to Yonker & Schultz, Yakima, **$126,880.** Est. $118,860. Bids 12/22. CD 11/30.

AIRPORTS AND AIRBASES

BIDS ASKED

Kan., Emporia—AIRPORT IMPRVS.—B.A. 1/10—At office F. L. Nevins, city clk., b. conc., paved runway, taxiway and parking area and furnishing, erecting wind cone and segmented circle markers. Proj. No. 8-14-009-002, at Emporia Municipal Airport, on State Hy. K-99, 5 mi. south of here. CD 2/5/47.

N. J., Newark—RUNWAYS, etc.—B.A. 1/10—At office, Chief Engineer Port of New York Auth., 111 8 Ave., New York, 11, N. Y., fur-



SUPER-VULCAN

OPEN TYPE • DIFFERENTIAL-ACTING

PILE HAMMERS

18C, 30C, 50C and 80C

●Super-Vulcan gives users a long lifetime of efficient trouble-free, pile driving service. It's super-rugged, super-durable, simple in design and operation . . . built to meet requirements established by experienced contractors. In its rapid, positive action it packs all the power you'll ever need on any pile driving job.

Super-Vulcan is easily adapted to all type of piles and it fits the same leads, uses the same accessories, as Warrington-Vulcan Single-Acting Pile Hammers.

Yes, it's a honey of a hard hitting hammer . . . job tested throughout the world. Write today for complete details.

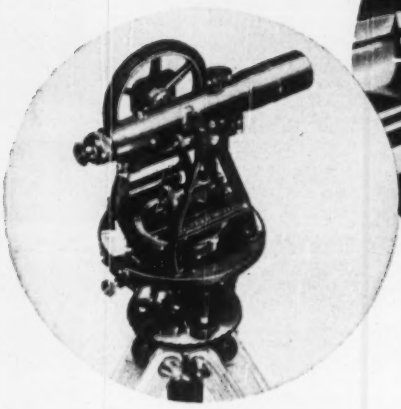
Sizes 18C—30C—50C—80C meet all needs

VULCAN IRON WORKS Since 1892

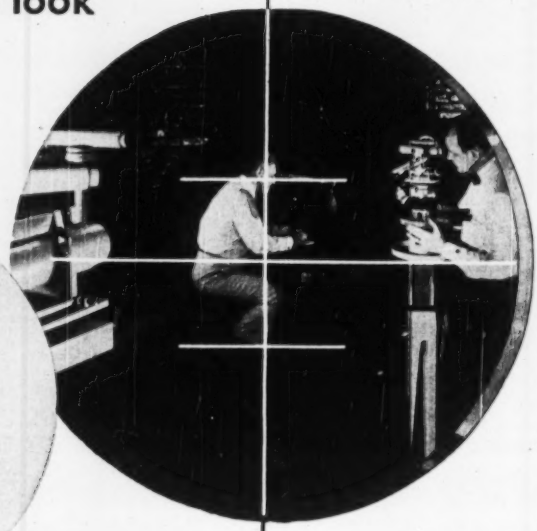
331 North Bell Avenue

Chicago 12 ---Illinois

While you're looking through a transit, take a look at what's behind it



Focused on infinity, strategically placed collimators provide the means for precise calibration of assembled Gurley transits.



Double check the divided circles.

Collimating facilities equivalent to those maintained only by the U. S. Coast and Geodetic Survey and the Engineer Research and Development Center, at Fort Belvoir, Virginia, are used to calibrate assembled transits at Gurley. Instruments reading to one second, such as Gurley Theodolites, can be accurately calibrated to a fraction of a second; *and "20-second" transits to approximately one second.*

Here Gurley engineers can "sight a star" within the 10′ distance from center post to collimator pedestals—duplicating first order outdoor observing programs without weather uncertainties. Azimuths are accurately determined by revolving the test instrument and sighting through each of six collimators. Divided circles are finally adjusted by precise optical methods.

Yes, in a Gurley, you can always be sure of expert workmanship throughout...a tradition of over a century of fine instrument making. For complete details, write for Bulletin 50.

W. & L. E. GURLEY, UNION PLAZA, TROY, NEW YORK

Surveying and Engineering Instruments, Hydraulic Engineering Instruments, Standard Precision Weights and Measures, Paper and Textile Testing Instruments, Aeronautical Navigating Instruments, Meteorological Instruments, Reticle Making Facilities

GURLEY

Surveying and Scientific Instrument Makers
Since 1845

nishing, placing fill and drainage facilities for runways and taxiways at Newark Airport, Contr. NA-25. Plans deposit $25. Howard S. Cullman, chn. CD 8/16, under LB.

N. J., Newark—TERMINAL—B.A. 1/16—At office, Chief Engineer, Port of New York Auth., 111 8 Ave., New York, 11, N. Y., terminal bldg. expansion at Newark Airport, Contr. NA-20. Plans deposit $50. Howard S. Cullman, chn. CD 10/18.

Tex., Lubbock—AIRPORT IMPRVS.—B.A. 1/12—City, airport imprvs., paving, concrete curbs and gutters, sprinkler sys., sodding, lighting, $50,000. O. R. Walker, 300 Clifton Theatre Bldg., engr. and archt. CD 10/4.

LOW BIDDERS

♦♦Va., Langley Field — LABORATORY —National Advisory Com. for Aeronautics, Langley Air Force Base, Dec. 20, gas dynamics laboratory, internal flow laboratory, Spec. L-2300, West Area, from The Rust Eng. Co., Clark Bldg., Pittsburgh, Pa., **$3,620,449.** CD 11/22.

PUBLIC BUILDINGS

BIDS ASKED

●Ill., Elgin — HIGH SCHOOL—B. A. after 1/3 —Elgin Bd. Educ., 353 E. Chicago St., 2 story, steel, brick, concrete high school. $1,100,000. Leroy W. Thompson, 355 Congden Ave., archt. Elmer Gyllick, 120 Grove St., Elgin, assoc., archt.

N. Y., New York—VENTILATION—B. A. 1/9—At office Chief Engineer, Port of New York Auth., 111 8th Ave., Zone 11, ventilation bldg. for West 179 St. Tunnel, George Washington Bridge, Contr. GWB-7.

Mass., Athol—HOUSING—B.A. 1/16—A. J. Schumacher, archt., 102 Mt. Auburn St., Cambridge, 39 single houses, FA Proj. (Athol 200-1, for Town of Athol Housing Auth., Geo. F. Holland, chn., $300,000. Extended date. CD 12/12.

♦Neb., Gering—GARAGE—B.A. 1/16—Bureau Reclamation, Dpt. Interior, Casper, Wyo., erecting 4-stall government-car garage at Gering Substation, Spec. R7-98 (Region 7), Missouri River Basin Proj. Transmission Div.

N. Y., Shelter Island—SCHOOL—B.A. 1/10 —Bd. Educ., Union Free School Dist. 2, Shelter Island, grade and high school. $250,000. Frederick P. Wiedersum, 240 Rockaway Ave., Valley Stream, archt. CD 6/28/45.

Tex., San Ysidro (Delmita P. O.)—HIGH SCHL.—B.A. 1/16—San Ysidro Independent School Dist., San Ysidro, via Delmita, high school, remodeling school. $350,000. Plans deposit $25. Cocke, Bowman & York, 1220 W. Harrison St., Harlingen, archts. CD 12/7.

S. C., Columbia—HIGH SCHOOL—B.A. 1/10 —City, City Hall, 1737 Main St., Hand Junior High School addn. Plans deposit $25. James B. Urquhart, Palmetto Bldg., archt.

Ala., Jasper—HOMES—B.A. 1/11—Jasper Housing Auth., c/o Long & Gathing, archts., Frank Nelson Bldg., Birmingham, 40 duplex type homes, $300,000. Plans deposit $25. Extended date. CD 12/7.

♦Kan., Leavenworth—POWER PLANT—B.A. 1/11—Pub. Bldgs., Admin., Federal Wks. Bldg., F St. between 18 and 19 Sts., N. W., power plant at Federal Penitentiary. CD 9/26/44.

N. Y., Rockaway—HOUSING TOPSOIL PLANTING IMPRVS.—B.A. 1/11—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting for Arverne Houses (Proj. No. NYC-18) in area bounded by Rockaway Blvd., Beach 56 Drive, Beach 56 St., Beach Channel Dr. and Beach 54 St., Queens Boro. Plans deposit $25.

Pa., Mansfield—BOILERS, etc.—B.A. 1/11 —Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, installing boilers and steam distr. lines at Mansfield State Teachers College. Plans deposit $7.50 heating, $2.50 others. Albert C. Wood Assoc., Stock Exchange Bldg., Phila., engrs. CD 1/25/46.

January 11

Ont., Petawawa — HOUSING — J. D. McCarthy, secy. Canadian Commercial Corp., 70 Lyon St., Ottawa, permanent two company barrack block at Petawawa Military Camp, Tender G-3-29-419. Approx. $250,000. Plans deposit $25.

Minn., Windom — PLANT IMPRVS. — B.A. 1/12—City, M. C. Langley, clk., power plant imprvs., incl. turbine room addn., and install 2000 kw. turbine generator unit. Approx. $200,000. Plans deposit $35. Pfeifer & Schultz, 702 Wesley Temple Bldg., Minneapolis, engrs.

Ark., Newport—SCHOOL—B.A. 1/15 —Newport Independent School Dist., c/o Herbert Voelcker, archt., 1202 Dennis St., Houston, Tex., school, $350,000. CD 11/1.

January 16

Calif., Lodi — SCHOOL — Lodi Elementary School Dist., Lodi, George Washington School. Approx. $250,000. Plans deposit $100. Peter L. Sala, 2130 N. Commerce St., Stockton, archt.

Kan., Lawrence—CITY—B.A. 1/16—City, City Hall, city bldg. for Fire and Police Dpt. $290,000. C. G. Ossman, 418 Central Bldg., Topeka, archt. CD 11/25.

N. Y., Romulus—SCHOOL—B.A. 1/16—Bd. Educ., High School Bldg., school addn., garage, John E. Ehrlich, 22 Seneca St., Geneva, archt.

O., Toledo—SCHOOL—B.A. 1/16—Bd. Educ., Ottawa Hills School Dist., Toledo, 1 story, 62x180 ft., red brick school addn. $265,000 bonds voted. Peterson, Hoffman & Barber, Spitzer Bldg., archts. CD 4/28.

♦O., Toledo — HOUSING — B. A. 1/16 — Dpt. of Army, The Pentagon, Wash. 5, D. C., construct, manage and finance 52 rental units for Rossford Ordnance Depot. CD 11/21.

Tex., Lufkin—HIGH SCHOOL—B.A. 1/16—Lufkin Independent School Dist., Lufkin, high school, $265,000-$300,000. Wilbur Kent, 217 S. 3 St., archt., Taylor Milton, 2615 Fannin St., Houston, engr. CD 12/13

Ont., Sioux Lookout—HOSPITAL—B. A. 1/16 —Town, A. Wrese, clk., 40-bed brick, concrete general hospital. Approx. $500,000. Plans deposit $25. Geo. Blanchard, 4502 Public Utilities Bldg., Fort Arthur, archt.

Ala., Auburn—EDUCATION—B.A. 1/17—**Bd.** Trustees Alabama Polytechnic Institute, Dr. Ralph B. Draughon, in office of W. T. Ingram, bus. mgr., Samford Hall, Auburn, central education building. Plans deposit $50. Van Keuren, Davis & Co., 212 American Life Bldg., Birmingham, Zone 3, archts. and engrs. CD 2/25.

January 17

Pa., Upper Darby—SCHOOL—Upper Darby Twp. School Bd., Lansdowne Ave. and School Lane, school, $750,000. T. Norman, Mansell, 262 S. 17 St., Phila., archt. Charles H. Wolf, 112 S. 16 St., Phila., engr. CD 1/13.

Tex., Austin—POWER PLANT WIRING—B.A. 1/17—City, c/o Guiton Morgan, City Hall, power wiring for Power Plant 2, $250,000. Burns & McDonnell Eng. Co., 95 Troost Sts., Kansas City, Mo., engr. CD 8/1.

Tex., Austin — GENERATING UNITS — B.A. 1/17—City, City Hall, Contr. 17, 2 steam generating units for power plant expans. Approx $100,000. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engr. CD 5/20.

Tex., Greenville — SCHOOL — B.A. 1/17 — Greenville Independent School Dist., c/o Supt., Greenville, school and gymnasium, $850,000. Plans deposit $25. Extended date. Preston M. Geren, 905 N. Anderson Bldg., Fort Worth, archt. CD 12/14.

Tex., Pleasant Grove (Dallas P. O.)—SCHOOL—B.A. 1/17—Pleasant Grove Independent School Dist., Pleasant Grove, school. $300,000. Mark Lemmon, 1210¾ Main St., Dallas, engr. CD 11/23.

●Mass., Weymouth — HOUSING — B. A. 1/18 —Town of Weymouth Housing Auth., Arthur F. Boynton, Jr., chn., 148 unit, 2 story, basmt. garden apts., East Weymouth Section, $1,450,000. M. A. Dyer Co., 24 School St., Boston, archt. CD 2/2.

♦California—B. A. 1/19—Bureau Reclamation, Dpt. Interior, Redding, completion Shasta Power Plant, Central Valley Proj., at Shasta Dam, approx. 16 mi. north of Redding, Spec. 2868, Michael W. Straus, comr.

Calif., El Centro—SCHOOL BUILDING—B.A. 1/19—City School Dist., El Centro, administration bldg. at Wilson School, locker and kindergarten bldg. at Washington School, administration, classroom and kindergarten bldgs. at Lincoln School; kindergarten and classroom bldgs. at Harding School, $500,000. Plans deposit $20. Albert E. Hansen, 257 S. Spring St., Los Angeles, archt. CD 7/26.

●O., Columbus—MEMORIAL HALL—B.A. 1/30—Comrs. Franklin Co., Courthouse, Veterans Memorial Hall, 10,000 persons capacity, incl. veterans wing, $4,500,000. Associated Architects, 33 N. Mitchell St., archts. CD 3/11.

●Tex., Lamarque—HOSPITAL—B.A. 1/30—Galveston Co., Courthouse, Galveston, county hospital, $1,000,000. Extended date. Golemon & Rolfe, 915 Woodrow St., Houston, and Charles J. Zweiner, Cotton Exchange Bldg., Galveston, archts. W. P. Moore, 4615 Montrose Blvd., and Reg. T. Taylor, Bankers Mortgage Bldg., Houston, engrs. CD 11/15.

LOW BIDDERS

Calif., Arcata—GYMNASIUM—Arcata Union High School Dist., Arcata, Dec. 12, rein.-con., structural steel gymnasium, from Central State Constr. Co., 593 Market St., San Francisco, **$301,976.** CD 11/22.

●Calif., Los Angeles—LAW—Bd. Regents University of California, 405 Hilgard Ave., Dec. 21, 70,000 sq. ft. law bldg., 3 audit. type classrooms, library conference rooms, offices, etc., from R. J. Daum Constr. Co., 6803 West Blvd., Inglewood, **$1,014,581.** CD 11/23.

Calif., Los Angeles—SCHOOL—City Bd. Educ., 1425 S. San Pedro St., Dec. 20, Westchester High School, music bldg., cafeteria utility bldg., physical education bldg., social hall, home economics library, etc., from V. O. Brunzell Co., Box 432, Gardena, **$990,431.** CD 12/2.

●Calif., Sacramento — HOSPITAL — Sacramento Co., Courthouse, Dec. 21, 4 story, 460 bed, rein.-con., steel hospital addn., from Barrett & Hilp, 918 Harrison St., San Francisco, **$1,186,000** work complete except painting, **$38,463** painting. CD 11/22.

Ill., Evanston—TECHNICAL — Evanston Twp. High School Dt., 1600 Dodge Ave., Dec. 14, 1 and 2 story, steel, concrete, brick technical bldg., from Peter Hamlin Co., 9 S. Clinton St., Chicago, Zone 6, **$367,000.** CD 12/1.

●La., Shreveport—HOUSING—City of Shreveport Housing Auth., City Hall, Dec. 15, Elemite Terrace Housing Proj. La. 2-1 from J. A. Jones Constr. Co., 354 Arco Dr., **$1,685,000,** est. **$1,166,000.** CD 11/9.

♦Md., White Oak—RESEARCH FACILITIES—Potomac River Naval Command, Naval Gun Factory, Wash., 25, D. C., Spec. 20886, explosive research facilities at Naval Ordnance Laboratory, from L. Cecil Curtis Builders, Inc., 1906 M St. N. W., Wash. 6, D. C., **$427,000.** CD 12/15.

N. C., Wilson—SCHOOLS—Bd. Trustees, Wilson County Schools, S. G. Chappel, supt., Wilson, Dec. 14, Cross and Elvie Schools, from McKoy-Helgerson Co., Greenville, S. C., **$348,660.** Frank W. Benton, Wilson, archt. CD 12/12/47.

●Oklahoma — POWERHOUSE, etc. — U. S. Eng., Box 61, Tulsa, Zone 2, Dec. 15, power house and swit-hyard facilities, railway spur track, ventilating air-conditioning, access roads, drainage, equipment installation, Fort Gibson Dam Proj., Inv. No. CIVENG-34-066-50-50 from W. R. Grimshaw Constr. Co., 1128 Hunt Bldg., Tulsa, **$2,737,986.** Est. $1,500,000. CD 11/7

Okla., Oklahoma City—GYMNASIUM, etc.—Bd. Educ., 400 N. Walnut St., Zone 4, gymnasium, cafeteria and shops at Southwest Secondary School, 52 and Shields Sts., from Builders Constr. Co., Kerr-McGee Bldg., Zone 2, **$411,950.** Est. $410,000. Hudgins, Thompson & Ball, 1100 W. Main St., archts. CD 5/2.

Pa., O'Hara Twp. (near Sharpsburg)—SCHOOL—School Dist. of O'Hara Twp., Kittanning Rd., Sharpsburg, rejected bids Dec. 5, 1 story, irregular shape, 70x226 ft., brick, tile backup Montrose School L. B. **$304,000.** Will readvertise. CD 11/14.

●Texas, Oak Ridge—DWELLINGS—U. S. Atomic Energy Comn., P. O. Box 285, Dec. 21, 450 new multi-family dwellings units, from T. C. Bateson Constr. Co., Irwin-Keasler Bldg., Dallas, Tex., **$3,328,175;** site preparation, installing water and sewerage sys., road and parking areas, sidewalks and seeding and seeding, from Drainage Contractors, Inc., 22148 Michigan St., Dearborn, Mich., **$442,727.** CD 11/30.

Tex., Austin—POWER PLANT IMPRVS.—City, City Hall, Dec. 20, Contr. 15, power plant imprvs., piping and pipe short lines, equip. fdns. of concrete, etc., from E. E. Farrow Co., 1518 Kings Hy., Dallas, **$368,980.** Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engr.

CONTRACTS AWARDED

●Calif., Berkeley — JURISPRUDENCE — Bd. Regents University of California, Berkeley, general contract 3 story, L-shaped, rein.-con., structural steel jurisprudence bldg., to Parker, Steffetz & Pearce, 135 S. Park St., San Francisco, **$1,101,500.** Bids 12/9. CD 12/16, under LB.

Calif., Hayward — ACADEMIC, etc. — Hayward Union High School Dist., Hayward, high school buildings incl. 4 wood frame, cement plaster academic bldgs. and one wood frame

concrete boiler house, San Lorenzo, near here, to Empire Constr. Co., Ltd., 344 Harriet St., San Francisco, **$870,375.** Bids 12/7. CD 12/15, under LB.

●Calif., Point Mugu—RECREATION, etc.— Yards & Docks, Annex, Navy Dpt., Arlington, Va., enlisted mens recreation and ships service facilities at U. S. Naval Air Missile Test Center, to Gridley Constr. Co., Oxnard, **$244,457.**

Calif., San Jose—TELESCOPE—Bd. Regents, University of California, Berkeley, 120 ft., steel telescope bldg., air-conditioning Mt. Hamilton Campus, to Carrico & Gautier, 364 Ocean Ave., San Francisco, **$638,800.** Bids 12/13. CD 12/20, under LB.

D. C., Wash.—SCHOOL—Distr. Comrs., District Bldg., 14 and E Sts. N. W., 15 classroom Banneker Junior High School addn., alterations, to Zerkie Constr. Co., 1011 20 St., N. W., **$290,875.** Bids 10/27. CD 10/13.

●Ga., Atlanta—HOSPITAL—Fulton—De Kalb Hospital Auth., c/o Abreu & Robeson, archts., 2 Marietta St. Bldg., hospital, to Ralph W. Didschuneit, Candler Bldg., **$1,439,500.** Bids 12/19. CD 11/28.

Ill., Anna—HOSPITAL—State Dpt., P. Welfare, Executive Office, Springfield, general contract, rehabilitation, modernization main building at Anna State Hospital, to Lloyds Builders, Inc., 61 W. Springfield St., Chicago, **$920,740.** Bids 11/8, awarded 12/21. CD 11/18, under LB.

La., Jena—SCHOOL—**La** Salle Parish School Bd., Jena, high school, to Tudor Constr. Co., 1284 Murray St., Alexandria, **$416,333.** Bids 12/17. CD 11/28.

Ky., Bowling Green—HOSPITAL—Oval Motley, clk. Warren Co., Dec. 7, general contract Bowling Green-Warren Co. Hospital, to Smith Constr. Co., 1000 44 Ave. N., Nashville, Tenn., **$128,649.** CD 12/7.

Md., Baltimore — SCHOOL — City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, 1 and 2 story, part basmt., reinforced-con., steel, limestone Fallstaff School, Fallstaff Rd. and Gist Ave., to Costanza Constr. Co., 225 E. Redwood St., **$504,750.** Bids 12/14, awarded 12/21. CD 12/20, under LB.

Md., Upper Marlboro — SCHOOL — Prince Georges Co., Bd. Educ., Fairmount Heights Negro High School addn., Reed St., Fairmount Heights, to B & J Constr. Co., 3432 Connecticut Ave., Wash., D. C., **$567,430.** Bids 11/29. CD 12/5, under LB.

●Md., Upper Marlboro — SCHOOL — Prince Georges Co., Bd. Educ., Upper Marlboro Suitland Junior High School, Silver Hill Rd., Suitland, to Jos. F. Nebel Co., 2142 P St. N. W., Wash., D. C., **$1,381,685.** Bids 11/8. CD 11/11, under LB.

●†Md., Upper Marlboro — SCHOOL — Prince Georges Co. Bd. Educ., Upper Marlboro, 2 story, brick, concrete, cinder block, steel high school, Hyattsville, to George Hyman Constr. Co., 1010 Vermont Ave. N. W., Wash. D. C., **$1,383,000.** Bids 12/12, awarded 12/22. CD 12/16, under LB.

†N. M., Los Alamos—RADIOGRAPHIC RESEARCH—U. S. Atomic Energy Comn., Los Alamos, radiographic research Inv. No. 291-50-36, to Robert E. McKee, Box 637, Santa Fe, **$635,928.** Est. $750,000-$100,000. Bids 12/21. CD 12/28, awarded 11/30/50.

●†N. C., Durham—HOSPITAL—U. S. Eng., 308 Customhouse, Wilmington 500 bed general medical Veterans Admin. Hospital, for Veterans Admin., Vermont Ave. between H and I Sts. N. W. Wash. D. C. to Thompson & Street Co., Durham, **$5,668,126.** Bids 12/14. CD 12/19, under LB.

Okla., Blackwell—POWER PLANT EQUIPMENT, etc.—City, evaporators, closed heaters, condensers, to Condenser Service Co., 37 River St., Hoboken, N. J., **$65,681.** $75,000 boiler setting, boiler erection, turbine installation, to Valley Constr. Co., Marshall, Mo., **$104,-253,** est. $125,000**high pressure steam boilers, to Riley Stoker Corp., 93 Neponset St., Worcester, Mass., **$55,973,** est. $65,000***switch gear and auxiliaries, to General Electric Co., River Rd., Schenectady, N. Y., **$88,106,** est. $95,000, all above for Blackwell Power Plant. Grand total **$314,013.** Bids 12/1. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

Okla., Durant—PHYSICAL EDUCATION, etc.—Bd. Educ., Durant, physical education bldg. and home economics, to Burton Miller Constr. Co., Ardmore, **$313,065.** Bids 12/14, awarded 12/19. CD 11/21.

●†Pa., Phila.—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash., D. C., general contract Veterans Hospital, Spec. 4925, to John McShain, Inc., 17 and Spring Garden Sts., **$6,527,200.** Bids 12/13, Awarded 12/21. CD 12/14, under LB.

Pa., Waysmart—TUBERCULAR HOSPITAL, General State Auth., 18 and State Office Bldg., Harrisburg, general contract2 story brick, tubercular hospital at Fairview State Hospital, to Tahone & Barbera, 186 N. Main St., Pittston, **$371,700.** Bids 12/21. CD 11/28.

●†Wash., Hanford—PLANT EXPANSION—General Electric Co., Hanford, plant expansion for Hanford Works, for the Atomic Energy Commission, to Atkinson-Jones (Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif. and J. A. Jones 200 W. 4 St., Charlotte, N. C.), Total est. **$200,-000,000.**

W. Va., Morgantown—LIBRARY—West Virginia University, Morgantown, 2 story, basmt., brick, stone, steel frame library addn., to Lynch Pugh & Corson, Morgantown. Approx **$500,000.** Bids 11/29. CD 11/11.

COMMERCIAL BUILDINGS

BIDS ASKED

Mass., Pittsfield—SCHOOL—B. A. 1/10— St. Lukes Hospital, Sisters of Providence, Pittsfield, 6 story, basmt., 100x200 ft., brick, steel nurses' school, East St. **$750,000.** Plans depart **$25.** CD 9/29.

Md., Baltimore—CHURCH, etc.—B.A. 1/12. Shrine of the Little Flower Church, 2899 Brandon Ave., 2 story, basmt., 180x142 ft., stone church and brick, stone rectory, Murphy & Lockart, 1518 P St. N.W., Wash., D. C., and John F. Eyring, 8105 Conkling St., Baltimore, archts. Eiser & Akers, 916 N. Charles St., consult. engrs. CD 10/10.

●Mass., Boston—STORE — B. A. 1/19—Jordan Marsh Co., 450 Washington St., 7 story, basmt., brick, steel, terra cotta, glass dpt. store. Unit 2, Summer St., $2,500,000. Perry Shaw & Hepburn Kehoe & Dean, Park Sq. Bldg., archt. CD 6/1.

Minn., St. Paul—SCHOOL—B.A. 1/24—St. Luke's R. C. Church, C. Culliman, 22 N. Lexington Parkway, 2 story, basmt., school, Oxford St. between Portland and Summit Aves. $500,000. Slifer & Cone, 440 Endicott Bldg., archts. CD 11/30.

●Okla., Tulsa—HOSPITAL—B.A. 1/24 (tentative dates—Hillcrest Memorial Hospital, 1653 E. 12 St., 8 story, 100x147 ft. hospital wing, $2,000,000. Leon B. Senter, Philtower Bldg., archt. CD 9/1.

Minn., New Ulm—SCHOOL—B. A. February—Holy Trinity R. C. Parish, Rev. V. Schiffrer, school, incl. gymnasium-auditorium, $250,000. E. J. Prendiznski, 210 W. 26 St., Minneapolis, archt CD 12/30/44.

Ky., Benham — SCHOOL — B. A. 2 1 —International Harvester Co., c/o D. E. Perkins, Harlan, archt., elementary and high school. CD 12/1.

SOON LETS CONTRACT

Ala., Mobile — CHURCH — Presbyterian Church, c/o Wm. H. March, archt., 120 St. Joseph St., soon lets contract church.

LOW BIDDERS

Calif., Oakland — OFFICE—Hospital Service California 360 14 St., Dec. 16, 3 story, basmt., structural steel office, from Dinwiddie Constr. Co., 2130 Crocker Bldg., San Francisco, **$534,517.**

Calif., San Francisco—HOTEL—Allied Properties, 745 Market St., San Francisco, rejected bids Dec. 16, altering Clift Hotel, Approx. **$250,000.** CD 12/13.

Fla., Winter Park — LIBRARY — Rollins College, Winter Park, Dec. 21, library, from Henry A. Ivey Co., 1689 Plus St. N. W., Atlanta, Ga., **$375,828.** CD 11/13.

Ore., Roseburg—HOSPITAL—Douglas County Community Assn., Roseburg, 44 bed community hospital, from Todd Building Co., Box 27, **$379,700.** Cleo Jenkins, Corvallis, archt.

CONTRACTS AWARDED

●Conn., East Hartford — HOMES—Wood Crest Development, Arthur G. Woods, 1098 Matianock Ave., Windsor, 220 single frame homes, 40 acre site. Owner builds. **$2,000,000.** CD 12/20.

●D. C., Wash.—APARTMENT—Boston House, Inc., 1024 Vermont Ave., N. W., 8 story, 270 unit brick, cinder block, concrete apartment, 1709 Massachusetts Ave. N. W., to Morrison & Hollingsworth, 5200 Annapolis Rd., Bladensburg, Md., **$1,000,000.** Hunt & Moeller Assoc., archts.

Ill., Brookfield — APARTMENTS — Hollybrook Gardens Corp., 9227 Shields Ave., ten 2 story apartment bldgs., separate contracts. Approx **$355,000.** E. F. Quinn & Assocs., 134 N. LaSalle St., Chicago, archts.

●Ill., Lansing — RESIDENCES — Frank A. Schmidt Sons Co., 3700 E. Cottage Grove, Chicago Zone 19, 200 one story, basmt., residences. Owner builds. **$2,000,000.** Carl Sharapago, 5208 W. Congress St., Chicago, Zone 44, archt.

Ind., LaGrange—ACADEMIC—Howe Military School, LaGrange, 2 story, limestone, memorial academic bldg., to C. C. Constr. Co., 2801 E. Pontiac St., Fort Wayne. Approx. **$275,000.**

Ia., Iowa City—STORE—Younker Bros., 111 E. Washington St., store, to Kucharo Constr. Co., Jewell Bldg., Des Moines, **$283,000.** Bids 11/15. CD 6/9.

Ky., Louisville — HOSPITAL — Red Cross Hospital Assn., 1436 S. Shelby St., 4 story, basmt., reinforced-con., steel, brick hospital addn., to Schickli Constr. Co., E. Jefferson St., Louisville. Zone 4. **$127,173.** Bids 12/13, awarded 12/13. CD 12/20, under LB.

●Md., Baltimore—APARTMENT—United Contractors, Inc., 204 E. Lexington Ave., fifty 2 story, 21x28x52 ft. apartments, 5600-10 and 5601-13 Haddon Ave., 5600-06 and 5601-05 Burtis Ave., 3601-07, 3701-07 and 3801-07 Parkview Ave., 3600-20 and 3601-15 Bowen Ave., owner builds. **$1,000,000.** Hart A. Moeller Assoc., 2118 Maryland Ave., Zone 18, archts.

●Minn., St. Louis Park—HOUSING—Donovan, Inc., 1525 Carroll Ave., St. Paul, 556 unit Meadowbrook Manor Housing, 129 garages, to Bonnath Constr. Co., 1525 Carroll Ave., St. Paul. **$5,500,000.** Work underway. Bids 9/7 CD 9/1.

Mo., Springfield — CHURCH — First Baptist Church, c/o Pastor, South and Elm Sts., brick, concrete church, to W. R. Grimshaw Co., Hunt Bldg., Tulsa, Okla., Approx. **$500,000.** CD 10/31.

Mont., Billings — APARTMENT — Western Apts., Lew A. Williams, 640 Poly Dr., general contract 6 story, reinforced-con., U-shaped apartment, air-conditioned, to Hitz Constr. Co., 2111 Fourth Ave. N., **$500,000.**

N. J., Trenton — CHURCH — Blessed Sacramento Church, Bellevue and Hermitage Aves., and Diocese of Trenton, 153 N. Warren St., 60x174 ft., 40 ft. high, 720 seating stone terrazo flooring Blessed Sacramento Church, to John McShain, 832 Prospect St., Approx. **$500,000.** Bids 12/20. CD 12/19.

●Pa., Brentwood — SHOPPING CENTER — Phillip Reischer, 5880 Forbes St., Pittsburgh, 1 story, basmt., L-shaped, 300x200 ft. shopping center, Brownsville Rd. and Burden St. Owner builds. Approx. **$1,000,000,** CD 8/8.

Pa., Phila. — RESIDENCES — Woodbine Corp., 1262 Unruh St., residential development, Oakland St., separate contracts. **$250,000.** Christian H. Fries, 3701 N. Broad St., archt.

●Pa., Pittsburgh — APARTMENT — Baldwin Court Apartments, Inc., 1153 Prospect Rd., twenty-one 2 and 3 story, basmt, brick, block apartments, Baldwin Twp. Owner builds. **$2,-500,000.** Phillip Friedman, 121 S. Negley St., archt.

Pa., Pittsburgh — OFFICE — Union Railroad Co., Union Trust Bldg., 5 story, basmt., 45x127 ft., brick on tile, steel office addn., 644 Linden Ave., to Dick Constr. Co., 2532 Library Rd., Approx. **$400,000.** Bids 11/22. CD 11/16.

Pa., Sewickley — ACADEMY — Sewickley Academy, Sewickley, academy addn., alteration, ot Rust Eng. Co., 575 6 Ave., Pittsburgh. Approx **$250,000.** Bids 9/27. CD 9/22.

R. I., West Warwick — HOUSING — Harley Robinson, 2 Tyler St., 30, 1½ story, 25x30 ft. homes. Owner builds. **$250,000.**

Tenn., Memphis — HOMES — C. M. Jacobson & Lloyd Lovitt, c/o George F. Mahoney, archt., 2036 Jefferson Ave., 61 homes. Owner builds. Approx. **$350,000.**

●Tex., Dalias—RADIO BROADCASTING and OFFICE—Liberty Broadcasting System, c/o KLIF Station, R. B. McLendon, Towers Hotel, 10 story, basmt., radio broadcasting studio, office, Purchase and Hire. Approx. **$1,000,000.** CD 12/19.

Tex., Dallas — DWELLINGS—Moody & Tips, 701 Forest Lane Rd., 30 brick, concrete dwellings, adjacent Cedar Crest Country Club in Cedar Crest Country Club addn., **$540,000; 60 low priced dwellings** in 400 acre site, **$360,000,** Owner builds. CD 3/3.

Tex., Fort Worth—RESIDENCES—Wm. C. Carter, 3541 Stadium Dr., 75 residences, Bluebonnets Hills, own forces. Approx. **$700,000.** CD 12/2.

●Tex., Fort Worth—HOUSING—Ridglea Manors, Inc., 2825 Crockett St., 120 rental housing units, (1st unit of 240 unit proj.) in Ridglea Addn., own forces. Approx. **$1,000,000.** CD 11/25.

Tex., Houston — APARTMENTS — Bayou Park Apartments, 8302 Leander St., apartments off LaPorte Rd. Proj. Owner builds. **$400,000.**

Tex., Houston—OFFICE—DeLaup Office Building Co., 4009 Center St., 4 story, 20,000 sq. ft., steel, brick, hollow tile office, to Tellepsen Constr. Co., 1710 Telephone Rd., **$316,500.** Est **$250,000.** Bids 9/23. CD 9/15.

Tex., Houston — OFFICE — Houston Title & Guaranty Co., Shell Bldg., 4 story, basmt, office, to Tellepsen Constr. Co., 1710 Telephone Rd. **$455,000,** CD 12/16.

Tex., Houston—DWELLINGS—Strickland-Whipple Constr. Co., 2nd Natl. Bank Bldg., 120 dwellings, in Woodlawn Acres Annex No. 3, own forces. Approx. **$675,000.** 11/25.

●Wash., Ephrata — APARTMENTS — Century Constr. Co., 1917 1 Ave., Seattle 2 one story frame apartments, day labor. **$1,128,000.** CD 12/1.

Ont., Toronto — STORES — Brewers Warehousing Co., Ltd., 19 Richmond St. W., four 1 story, 45x120 ft., structural steel, brick, steel sash, retail stores. Lake Shore Rd., Long Branch; Kingston Rd., Yonge St. and Centre Ave. and Collison Blvd. and Wilson Ave., to Canada Constr. Co., Ltd., 1313 de Forest Rd., Approx. **$500,000.** Bids 12/15. CD 11/25.

INDUSTRIAL BUILDINGS

BIDS ASKED

Que., Montreal — WAREHOUSE — R. A. 1/9 W. J. Rosenberg, archt., 2052 W. St. Catherine St., 1 story, 180x200 ft., reinforced-con., brick warehouse on Bedford Rd., for Kruger Paper Co., 941 Inspector St. Approx. **$500,000.** CD 12/19.

●Pa., Pittsburgh—VINEGAR—B. A. 1/16—H. J. Heinz Co., Progress St., 3 story, 90x310 ft. glass, structural steel vinegar bldg., loading dock and silos, Progress St. **$1,000,000.** Skidmore, Owings & Merrill, 5 E. 57 Sts., New York, N. Y., archts. CD 12/23.

Minn., Maple Lake — GARAGE, etc. — B. A. 1/19—Wright-Hennepin Electric Co-operative, Maple Lake, 1 story garage and office, $100,000. Long & Thorshov, 400 Metropolitan Life Bldg., Minneapolis, archts. CD 12/16.

Conn., Groton — MILL — Bids Asked — Max Pollack & Co., Inc., Poquenoack Rd., 1 story, brick, steel mill addn., concrete floors, Poquenock Rd. **$68,000** G. H. Bernstein, 302 State St., New London, archt.

Tex., Sherman — WAREHOUSE—Bids Asked —Kimbell Milling Co., Sherman, Cotton Oil Mill Warehouses No. 1 **$100,000,** and No. 2, **$75,000.** CD 12/12.

SOON LETS CONTRACT

Ill., Chicago — FACTORY — V. Mueller & Co, 468 S. Monroe St., Zone 12, soon lets contract 2 story, bsmnt., 125x90 sq. ft., steel, concrete brick factory, $150,000. Mittelbuscher & Tourtelot, 36 S. State St., Zone 3, archts.

La., New Orleans—WAREHOUSE—Richard Koch, archt., Queens Crescent Bldg., soon lets contract 1 story, 230x310 ft., brick, hollow tile, concrete, steel warehouse, incl. 2 storage units, to be erected in square bounded by Decatur, Mandeville, North Peters and Marigny Sts., for Standard Coffee Co., 725 Magazine St.

W. Va., Moundsville—FACTORY—Fostoria Glass Co., Moundsville, soon lets contract 3 story 90x120 ft., brick, steel factory, $200,000. Lockwood Greene Co., Rockefeller Plaza, New York, N. Y., engr. CD 4/16/47.

BIDS ASKED

Ind., Indianapolis — WAREHOUSE — Omar, Inc., 1910 Harney St., Omaha, Neb., branch warehouse, to R. E. Schenk, 1538 N. Meridian St., $100,000. Bids 9/30. CD 9/30.

Ia., Anamosa — SHOP, etc. — Maquoketa Valley Rural Electric Co-operative, Anamosa, general contract shop and maintenance bldg. to Kraus-Anderson, Inc., 501 S. 8 St., Minneapolis, Minn., $117,943. Bids 12/6, CD 2/11, under Unclassified, Iowa.

Tex., Houston — WAREHOUSE — Standard Roofing Co., 4910 Navigation Blvd., warehouse, from J. O. Jones Co., P. O. Box 6051, $72,218.

Tex., Sinton — WAREHOUSE, etc. — San Patricio Electric Co-operative, Sinton, Dec. 21, co-operative warehouse, storage, service and utility, from Lawrence & Alford, Box 2148, Corpus Christi, $76,670. Smyth & Smyth, 1806 Alameda St., Corpus Christi, archts.

Wis., Menomonee Falls — FACTORY, etc. — Stoeper Steel Products, 3528 W. Pond du lac Ave., Milwaukee, one 100, Dec. 19, 1 story, part bsmt., 290x420 ft., steel, brick factory and office, concrete fdns. and floors, from Edward H. Meyer Constr. Co., R. 1, Hy. 41, P. O. Box 705, Neenah. CD 11/28.

CONTRACTS AWARDED

Ill., Chicago — PLANT — American Weekly, Inc., 2615 S. La Salle St., Zone 16, color plant expansion, to Carroll Constr. Co., 333 N. Michigan St., Zone 1. $200,000. Johnck, Ehmann & Benn 104 S. Michigan St., Zone 3, archts.

Ill., Chicago—CRANEWAYS—Jos. T. Ryerson & Sons Co., 2510-36 16 St., Zone 8, six covered craneways, steel cols., steel decks, to Carl E. Erickson Co., 2647 N. Ravenswood St., Chicago, Zone 40, $541,030. Awarded 12/16. E. R. Kimball, c/o principal, archt.

N. C., Rocky Mount—BAKERY—American Bakeries Co., c/o Stevens & Wilkinson, archt., 157 Luckie St. N.W., Atlanta, Ga., Dec. 21, bakery, to Southern Builders, Inc., Fayetteville. $516,000. CD 12/7.

N. D., Dickinson—PACKING PLANT—Queen City Packing Co., Dickinson, meat packing plant addn., to Braum Constr. Co., Dickinson, $80,000.

●**O., Warren** — STEEL MILL — Thomas Steel Co., Warren, 4 tandem cold reduction steel mills, to F. H. McGraw & Co., 51 E. 42 St., New York***mechanical equip., to United Eng. & Fdrs. Co., 420 Lexington Ave., New York, N. Y.***main mill drives, to Westinghouse Electric Corp., 40 Wall St., New York, N. Y.***auxiliary electric equip., to General Electric Co., River Rd., Schenectady. Est. $1,200,000. CD 8/12.

Okla., Gage — GRAIN ELEVATOR — Gage Grain Co., Gage, 300,000 bu. grain elevator, to L. S. Fisher Woodward; $88,000. Est. $90,000. Awarded 12/11.

Okla., Hydro—GRAIN ELEVATOR—Farmers Elevator Co., Hydro, 300,000 bu. grain elevator, to Mayer-Osborn, Inc., 1717 E. Colfax Ave., Denver 6, Colo. $90,000.

Okla., Oklahoma City — GARAGE, etc. — A. C. Walker, Jr., 021 N. W. 4 St., Zone 4, garage and service depot for postal trucks, N. W. 4 and Walker Sts., day labor $75,000. Bryan Nolen, Key Bldg., archt.

Okla., Shattuck — GRAIN ELEVATOR — Shattuck Grain Co., Shattuck, 600,000 bu. grain elevator, to L. S. Fisher, Woodward. $168,000. Awarded 12/10.

Pa., Johnstown — SHOP, etc. — Bethlehem Steel Co., Johnstown, 1 story, 40x180 ft., and 35x140 ft., brick, tile shop and storage bldg., to Bell Constr. Co., P. O. Box 472, Latrobe, $80,000.

Pa., Phila.—WAREHOUSE, etc.—Smith, Kline & French, Inc., 105 N. 5 St., 1 and 2 story, 264x384 ft., brick, steel warehouse and office, air-conditioned, to Barclay White & Co., 22 N. 36 St., $900,000. CD 9/28,* under LB.

Pa., Pittsburgh — MANUFACTURING — American Textile Co., 309 Penn Ave., mfg. bldg. alterations, Harrison St. to Branna Constr. Corp., 400 Bessemer Bldg. Approx. $250,000. CD 10/20.

Tex., Greenville — PLANT — Haggar Co., 6113 Lemmon St., Dallas, 30,000 sq. ft. slacks mfg. plant, to A. & M. Constr. Co., Construction Bldg., Dallas. Approx. $245,000. CD 12/19.

Wis., Milwaukee — WAREHOUSES, etc. — Argonaut Realty Div., of General Motors Corp., R-304 General Motors Research Bldg. A, Detroit, Zone 2, Mich., 1 and 2 story, 162x300 ft., warehouse and office, to Roland H. Becker, Inc., Elm Grove, steel, to Wordon-Allen Co., 4106 N. 3 St., Zone 12. Bids 11/22. CD 11/18.

Wis., Milwaukee — WAREHOUSE — Morley-Murphy Co., 5151 W. State St., Zone 8, 1 story, 883x218 ft., brick, steel, concrete block warehouse addn., concrete fdns. and floors, to Charles Maier & Son Co., 1633 N. 30 St. Zone 8. A. L. & A. W. Seidenschwartz, 2104 N. 64 St., Wauwatosa, Zone 13, archts.

UNCLASSIFIED

BIDS ASKED

Nebraska—SUBSTATION—B.A. 1/12—Eastern Nebraska Public Power Dist., R. C. Johnson, pres., Syracuse, 5 separate substations to stepdown from 69 kv to 7.2/12.47 kv, near Nehawka, Humboldt, Brock, Cook and Verdon. Henningson Eng. Co., 626 Standard Oil Bldg., Omaha, Zone 2, engr. CD 5/19/48.

N. Y., Jamaica—PARK—B. A. 1/12—Comr. Parks, at office of Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, addn. to Police Headquarters Bldg., etc., in Cunningham Park, Queens Boro, Contr. No. Q-21-149. Plans deposit $5.

N. Y., New York—PARK—B. A. 1/12—Comr. Parks, at office of Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, Contr. M-5-149, reconstruct northeast sect. of Battery Park, south of Battery Pl. and west of State St.; Contr. No. M-5-249, park lighting & connection with reconstruction of northeast sect. Plans deposit $10 and $5 respectively.

N. Y., Brooklyn — CIRCUIT BREAKER HOUSE—B.A. 1/13—Bd. Transportation, 250 Hudson St., New York, Zone 13, Contr. UG, circuit breaker house at Livonia Ave. and Warwick St.

✦**Nebraska**—BUS STRUCTURE, etc.—B.A. 1/16—Bureau Reclamation, Dpt. Interior, Casper, Wyo., furnishing, del. one bus structure and one transformer structure, incl. anchor bolts for Sidney Substation, Transmission Div. Missouri River Basin Proj., Spec. VII-102.

✦**Nebraska**—RELAY BOARD, etc.—B.A. 1/17—Bureau Reclamation, Dpt. Interior, Casper, Wyo., furnishing, del. one bus structure relay board, battery charger for Sidney Substation, Transmission Div., Missouri River Basin Proj., Spec. VII-94.

✦**Ohio** — RAILROAD RELOCATION — B.A. 1/17—U. S. Eng., Madison Ave. and 8 St. W., Huntington, W. Va., relocating Baltimore & Ohio R.R., Dillon Reservoir, grading and appurtenant work, Serial No. CIVENG-46-022-50-41. CD 11/2.

✦**Washington**—STRUCTURAL STEEL, etc.—B. A. 1/17—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Wheeler Atwood, and Ritell, structural steel, incl. beams, bracing, diaphragms, bearings, and field rivets and ribbed coils for railroad bridges at Ellensburg Canal, Stations 1635 plus 50.38 and 1811 plus 60 and Weber Wasteway Station 117 plus 06 and county road bridge at Weber Wasteway Station 59 plus 80, Columbia Basin Proj., Spec. 2877. L. N. McClellan, ch. engr.

P. E. I., Wood Island—HARBOR IMPRVS. —B.A. 1/18—Dpt. P. Wks., Hunter Bldg., Ottawa, ont., harbor imprvs. Approx. $30,-000. Plans deposit $10. R. Blais, c/o owner, engr.

✦**Colorado** — TRANSMISSION LINE — B.A. 1/19—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., constr. Poles Hill-Flatiron 115-kilovolt transmission line about 10 mi east of Estes Park, Colorado-Big Thompson Proj., Spec. 2874. L. N. McClellan, ch. engr.

✦**N. Y., Brooklyn**—CORE BORINGS, etc.—B. A. 1/19—At office J. J. Chew, Capt., CEC, USN, Officer-in-Charge of Construction, Bldg. 77, New York Naval Shipyard, concrete core borings and testing in floor of Dry Docks 5 and 6, New York Naval Shipyard, Spec. 23431. Plans deposit $10.

✦**North Dakota**—TRANSFORMERS, etc.—B.A. 1/19—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., transformers for Advance Power System REA Co-operatives, Transmission Div., Missouri River Basin Proj., Spec. 2813. Extended date. CD 11/29.

✦**Oregon** — RAILROAD RELOCATION — TRACK MATERIAL—B.A. 1/20—U. S. Engr., 19 E Poplar St., Walla Walla, Wash., furnishing track materials for Spokane, Portland & Seattle Ry. relocation, McNary Dam and Reservoir Proj., CIVENG-47-50-74.

✦**Tex., El Paso**—RECREATIONAL FACILITIES—B.A. About 1/23—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., recreational facilities (Fort Bliss, CWF-941), Serial No. Eng-29-003 (ACWF)-50-1.

✦**California**—TRANSMISSION LINE—B. A. 1/24—Bureau Reclamation, Dpt. Interior, Elverta, 230-kilovolt Elverta to Perkins double-circuit transmission line, Central Valley Proj., Spec. 2867. Michael W. Straus, comr.

✦**Oklahoma** — RAILROAD RELOCATION — B. A. About 1/26—U. S. Eng., P. O. Box 61, Tulsa, relocating Kansas, Oklahoma & Gulf Ry., Fort Gibson Reservoir, Grand (Neosho) River, Inv. No. CIVENG-34-066-50-86.

✦**Arizona-Nevada** — TELEPHONE SWITCHBOARD EQUIP — B. A. 2/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars Kingman, line circuit conversion-link circuit code-calling trunk circuit adapting and main distributing frame equip. for use with present Davis Dam automatic telephone switchboard, telephones, dial and common-battery manual types, telephone switchboard, desk type, cordless with 6 operators telephones for Davis Power Plant, Davis Dam Proj., Spec. 2875. L. N. McClellan, ch. engr.

✦**Oregon** — TRAVELING CRANE, etc.—B.A. 2/3—U. S. Eng., Pittock Block, Portland, design, mfg., testing, del. f.o.b. rail cars at Gates, one 300 ton traveling crane for Detroit powerhouse on North Santiam River, CIVENG-35-026-50-206.

✦**Washington**—TRANSFORMERS, etc.—B.A. 2/9—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Odair, Wash., transformers, resistors for Grand Coulee Power Plant, Columbia Basin Proj., Spec. 2878. L. N. McClellan, ch. engr.

✦**N. M., Los Alamos**—TUNNEL—B. A. 2/24—U. S. Atomic Energy Comm., Los Alamos, S. to 10 ft. diam. 4,500 ft. long, metal lined with concrete lining, tunnel through mountains, near here, 5 mi. long access road. Approx. $100,000. CD 10/28.

SOON LETS CONTRACT

La., New Orleans—TIMBER PILES—New Orleans Passenger Terminal Comm., 501 S. Saratoga St., soon lets contract 16,740 lin. ft. creosoted timber piles for Express Facilities of the Union Passenger Terminal.

LOW BIDDERS

Calif., San Francisco — PLAYGROUND IMPRVT.—Recreation Comm. of City and San Francisco Co., Dec. 21, Bixbee Playground imprvt., from H. L. Peterson Constr. Co., 733 Treat Ave. $79,436. CD 2/5/45.

Calif., San Francisco — PLAYGROUND — Recreation Comm. of City and San Francisco Co., 61 Groove St., Dec. 20, Longfellow Playground, from Frank W. Smith, Box 129 RFD, San Mateo. $53,556. CD 12/5.

Calif., San Francisco—MUSEUM—Recreation Comm. of City and San Francisco Co., 61 Grove St., Dec. 20, rein.-con. junior museum bldg., from Wm. Horstmeyer Co., 22 Mars St. $297,849. CD 11/30.

Ill., Chicago—FIELD HOUSE—Chicago Park Dist., 425 E. 14 St., Dec. 8, field house, loyola Park, Sheridan Rd. and Kenmore, general, from Svati & Goss, 5103 Lake St., $589,862. CD 11/18.

●✦**Oregon—Washington**—STEEL TOWERS—Bonneville Power Admin., Box 3537, Portland 8, Ore., steel towers for use at Maupin, Metolius and The Dalles, Ore and Goldendale, Hanford, Beverly and Coulee City, Wash., from American Bridge Co., Frick Bldg., Pittsburgh, Pa., $2,296,758.

●✦**Oregon**—RAILROAD RELOCATION—U. S. Eng., Pittock Block, Portland, Zone 5, Dec. 22, construct sect. Southern Pacific R.R. relocation and section of Oregon State Hy. 58 relocation near Meridian Dam site, from 3 mi. south and 6¾ mi. east of Junction City, Lane Co., CIVENG-35-026-50-152, from Leonard & Slate and E. C. Hall, 7805 S. W. 40 St., Portland, $2,072,628. Est. $2,288,325. CD 11/9.

✦**Oregon**—TRANSMISSION LINE—Bonneville Power Admin., Box 3537, Portland, Zone 8, Dec. 22, clearing right-of-way for McKinley-Bandon 115 kv transmission line, Inv. 4902, Coos Co., from Peterson Eng. Co., 41-26, 26 St., San Francisco, Calif. $88,380. CD 11/29.

CONTRACTS AWARDED

Md., Baltimore—STADIUM—City, Bureau Bldg. Constr., 419 Municipal Bldg., Zone 2, and portion of proj.: Babe Ruth Stadium, E. 32 St., incl. grading, constr. Lower Stands of Sections L.E. to S.E. and L.W. to S.W., to De Luca, Davis Constr. Co., and Frederick di Carozza, 162 E. 25 St., Baltimore, Zone 18, $747,345. Bids 1/4, awarded 12/23. CD 12/20.

Neb., North Platte—SWIMMING POOL—City, swimming pool, bathhouse, etc., to Mc-Michael Contractors, North Platte. $127,675. Bids 12/20. CD 11/4.

Oklahoma—RURAL DISTRIBUTION LINES —Northwestern Electric Co-operative, Woodward, 281 mi. rural distr. lines, Oklahoma 31 L. and N. Woodward, Part II, Woodward Co., to Triple H Constr Co., Linton, Ind. $267,272. Est. $275,000. Awarded 12/19. CD 11/2.

Pennsylvania — RURAL DISTRIBUTION LINES—Somerset Rural Electric Co-operative, Inc., Somerset, 123 mi. rural distr. lines and substations, Somerset Co., day labor. $500,000. CD 12/7.

Pa., Harmarville—BATHHOUSE—Consumers Mining Co., Harmarville, 1 and 2 story, 60x112 ft., concrete block bathhouse, to Ranco Constr. Co., 4783 Baptist Rd., Pittsburgh. Approx. $80,000.

Tex., Fort Worth—STADIUM—Fort Worth Baseball Club, J. L. Reeves, pres., N. E. 7 and N. Jones St., baseball stadium, to General Steel Co., 3901 W. Pafford St. $100,000. Herman G. Cox, 401 N. F. Anderson Bldg., archt. CD 5/26.

Tex., Sweetwater—PARK, etc.—J. C. & Guy Morris, Sweetwater, park and playgrounds, grading, site dirt work, own forces. $36,000.

Proposal Advertisements see p. 104

U. S. Government
(Continued from page 103)

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION, Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-2. Sealed bids will be received at this office until 2:00 P.M., February 7, 1950, and then publicly opened for Construction of a Veterans Administration Hospital, 1000 bed General Medical, Boston, Massachusetts, in accordance with specifications and plans, copies of which are available at this office. Deposit required of $100.00 per set for blueprints, which will be issued to General Contractors only. $35.00 for half-size reproductions, and $25.00 for specifications, in form of certified check or postal money order payable to "Treasurer of the United States". (481)

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION, Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-5. Sealed bids will be received at this office until 2:00 P.M., January 11, 1950, (NOTE CHANGED BID OPENING DATE), and then publicly opened for Construction of a Veterans Administration Hospital, 500 bed General Medical and 400 bed Tuberculosis, West Haven, Connecticut, in accordance with specifications and plans, copies of which are on file at this office. (435)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2873) will be received by Bureau of Reclamation, Denver, Colorado, January 31, 1950, and then publicly opened for furnishing four 115-kv, 1,200-ampere, 2,500,000-kva power circuit breakers; seven 115-kv, 600-ampere, 3-pole air switches; and one 115-kv, 200-ampere, single-pole, outdoor, expulsion-type disconnecting fuse for Leyner substation, Colorado-Big Thompson Project, Colorado. Delivery is desired within 480 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.
MICHAEL W. STRAUS, Commissioner. (496)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2874) will be received by Bureau of Reclamation, Denver, Colorado, January 19, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Pole Hill-Flatiron 115-kv transmission line, Colorado-Big Thompson Project, Colorado. The work is situated near Estes Park, Colorado. The line will be a 115,000-volt, 3-phase, single-circuit, wood-pole, H-frame type with 2 overhead ground wires and extending approximately 5 miles from the Pole Hill Power Plant to the Flatiron switchyard. Time allowed for completion will be 135 days. For particulars, address Bureau of Reclamation, Building 10, or Building 1-A, Denver Federal Center, Denver, Colorado.
MICHAEL W. STRAUS, Commissioner. (495)

OFFICIAL PROPOSALS

Bids: January 9, 1950 (492)

Sewer Construction

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 243-S

Sealed proposals for constructing the Northeast Branch Trunk Sewer from Lincoln Avenue, Riverdale to Paint Branch, Hyattsville and Berwyn Districts, involving approximately 235 feet of 6-inch, 8-inch and 15-inch sewers, and 5,435 feet of 36-inch RCCP and 2,315 feet of 36-inch RCCPX sewers, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Monday, January 9, 1950 at 2:00 P.M., Eastern Standard Time, at which place and time they will be publicly opened and read.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland, upon deposit of $5.00, which deposit will be returned to bidders or to those returning plans and specifications in good condition.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

OFFICIAL PROPOSALS

Bids: January 17, 1950 (480)

Downsville Dam and Appurtenant Works

CONTRACT 401

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, January 17, 1950, for Contract 401, for the completion of the construction of the Downsville dam of the Pepacton reservoir and for the construction of the waste weir, weir channel and waste channel of that reservoir, the release water chamber and tunnel and the appurtenances of all of these structures, together with the closure of the existing diversion tunnel and the final grading in the vicinity of the dam, all as set forth in the specifications. The Downsville dam will be approximately 2,450 feet in length with a maximum height of about 204 feet and will be constructed of earth compacted by rolling. The work is located near the Village of Downsville, Town of Colchester, Delaware county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of four hundred thousand dollars ($400,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, HENRY HESTERBERG, RUFUS E. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: January 31, 1950 (494)

Construction of River Water Supply

1. SEALED BIDS for the materials and construction of a
MAUMEE RIVER WATER SUPPLY FOR THE CITY OF BOWLING GREEN, OHIO
will be received by the City of Bowling Green, Ohio, at the office of the Board of Public Affairs in the City Hall, Bowling Green, Ohio until
12 O'CLOCK, NOON, EASTERN STANDARD TIME,
TUESDAY, JANUARY 31, 1950
and at that time will be publicly opened and read aloud in the Council Room.

2. The proposed work consists of the construction of

Section A—*Low Service Pumping Station;* 22' x 36' x 40' high, with entrance channel, bar screens, traveling screen, pumps, piping, electrical and appurtenances.

Section B—*Water Treatment Plant;* lime soda ash type of water softening plant capacity 3.0 M.G.D., with high service pumping station. Building 56' x 115' x 37' high.

Section C—*Transmission Main;* Approximately 43,300' of 16", or 18", or 20" main fittings, valves, and hydrants.

Section D—*Distribution Mains;* Approximately 12,400' of 12" and either 16" or 18" or 20" mains with fittings, valves and hydrants.

3. The contract documents, including plans and specifications are on file at the office of the Board of Public Affairs in the City Hall, Bowling Green, Ohio, and at the office of the Consulting Engineers, Finkbeiner, Pettis & Strout, 518 Jefferson Avenue, Toledo, Ohio. Copies of the documents may be obtained by depositing $30.00 with the Consulting Engineers for each set of documents so obtained. The amount of the deposit for each set of documents will be refunded to each actual bidder or vendor who returns the plans and documents in good condition prior to or at the time of opening of bids.

4. All bids shall be signed and submitted on the blanks which are bound into the specifications and shall be secured from the Consulting Engineers. Bids shall state the price for materials and labor separately on the blanks provided therefor; shall be enclosed in a sealed envelope marked "Bid for Low Service Pumping Station", and/or "Bid for Water Treatment Plant", and/or "Bid for Transmission Main", and/or "Bid for Distribution Mains", and shall be addressed to the Board of Public Affairs, City Hall, Bowling Green, Ohio.

5. Each bid must contain the name of every person, firm or corporation interested in the same, and must be accompanied by either a proposal bond with security satisfactory to the Board, or by a certified check on a solvent bank, in the amount of 5% of the bid, made payable to the City of Bowling Green, Ohio, as a guaranty that if the bid is accepted, a contract will be entered into and its performance properly secured.

6. The City of Bowling Green reserves the right to reject any or all bids; to waive any irregularities in bidding; and to accept the lowest and best bid.

7. No bidder may withdraw his bid for a period of 40 days after the scheduled closing time for receipt of bids.

By Order of the Board of Public Affairs
City of Bowling Green, Ohio
J. R. McDowell, Chairman

SEARCHLIGHT SECTION
(Classified Advertising)

EMPLOYMENT — BUSINESS
EQUIPMENT — USED OR RESALE
OPPORTUNITIES

REPLIES (Box. No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED: CIVIL Engineer capable of registering in any Southern State, including Florida. Experience on Natural Gas Distribution Systems preferred. Address: Littrell Engin. & Constr. Co., Inc., Moultrie, Georgia.

ESTIMATOR WANTED by General Contractor in Mid-South. Must be experienced in making quantity surveys for schools, churches, hospitals, office buildings, etc. This is permanent position. Give experience, education, age and salary requirements for interview. P-1844, Engineering News-Record.

STRUCTURAL DETAILER. Experienced, needed—good opportunity. Address Arkansas Foundry Company, Box 909, Little Rock, Arkansas.

STRUCTURAL CHECKER-detailer. All type structures. State qualifications, availability. Location East. P-1818, Engineering News-Record.

WANTED: REGISTERED Civil Engineer, Pennsylvania. Concrete or Construction experience, under forty, for position with future. Salary open. P-1470, Engineering News-Record.

FLOOD CONTROL Engineer. Prefer engineer with general experience on water and flood control projects and Corps of Engineers reports. Must be able to meet the public. Opportunity to affiliate with a progressive agency responsible for developing a sound State water control policy. Salary $4800 per year. P-1863, Engineering News-Record.

WANTED—TWO experienced Sewer Construction Foreman and Superintendent for Concrete Pipe and Rock Tunnel—Inquire United Foundation Corporation, 880 Lexington Rd., Union, N. J. or phone Unionville 2-4257.

PAVING SUPT. Able take charge entire operation concrete. Location New York State. Write experience, salary required. P-1862, Engineering News-Record.

(Continued on page 105)

WANTED

THREE OUTSTANDING MEN

to plan and supervise the work of design engineers on a $38,000,000 Water System Expansion Program; one registered in Civil, one in Mechanical and one in Architectural Engineering. Salary $6430 to $7147 per year. If you have a proven record of success in design and construction of major water pumping and filtration plants, we would welcome your application.

Supervisory Assistants ($5580 to $6297 per year) and Project Engineers, ($4809 to $5287 per year) in Architectural, Civil, Sanitary, Electrical, Mechanical and Structural Engineering will also be needed.

For information, write immediately to

DETROIT CIVIL SERVICE COMMISSION

15th Floor, Water Board Building — Detroit 26, Michigan

(Continued from page 104)

SELLING OPPORTUNITY OFFERED

SALES ENGINEER — 2 First-Class Salesmen required for Philadelphia and New York Metropolitan areas. Must have experience selling to construction companies and to field superintendents, and highest references as to selling ability. Position carries excellent prospects, salary, commission, expenses and car essentials. Send fullest details with photograph and date of availability to Acrow Inc., Graybar Bldg., NYC 17.

EMPLOYMENT SERVICES

SALARIED PERSONNEL $3,000-$25,000. This confidential service, established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

STRUCTURAL ENGINEER—Seeks position as chief engineer or chief draftsman for steel fabricator or supervisory design engineer for consulting or construction firm. Have thorough knowledge of steel fabricating practice, detailing, estimating, design and sales; experienced on design and supervision of industrial plants, institutional buildings, bridges, steel and concrete structures. PW-1743, Engineering News-Record.

CONCRETE FOREMAN—Also handle laborers in many branches of construction. Available now. PW-1815, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS WANTED

BRICKLAYERS, PLUMBERS, Carpenters ready to work anywhere. Thoroughly trained by experts. Baltimore Construction Institute Inc., 8 South Paca St., Baltimore, Md.

GENERAL SUPT. Construction-Project Manager, Graduate Civil-Mech. Engineer, 25 years diversified experience, including estimating; 15 yrs. as general supt.; seven yrs. foreign work, varied projects including refineries, industrial-chemical-steam-hydro electric-power and war plants; docks, utilities, airports, highways, railroads, public works, fireproof buildings, mass-housings. Speak, read Spanish, Portuguese, German. A-1 references. Native American. Good health. Available immediately. Foreign assignment preferred. PW-1785, Engineering News-Record.

PRESSURE GROUTING Supt. Available with experience man. Or will train your crew. PW-1816, Engineering News-Record.

CONSTRUCTION MANAGER or General Supt. available. 45, married. Now located in Florida. Could manage Florida office for reliable contractor. 22 years experience estimating, managing and supervising construction. A Civil Engineer ready to accept complete responsibility. PW-1854, Engineering News-Record.

STRUCTURAL DESIGNER licensed, draftsman detailer, charge, B.S., experience steel and reinforced concrete, bridge, tunnel, subway, viaduct, plants, industrial buildings. PW-1851, Engineering News-Record.

GRADUATE ENGINEER, 25 years diversified structural design experience. Licensed. New York City area desired. PW-1850, Engineering News-Record.

QUANTITY ESTIMATOR. Grad. Civil Eng'r. Six years experience preparing quantities for pricing public, commercial, indus. b'ldngs. PW-1796, Engineering News-Record.

CHIEF ESTIMATOR for General Contractor Available. Experienced all types General Construction. Current volume $60,000,000 per annum. Base salary $12,000 per year. Excellent references. PW-1813, Engineering News-Record.

(Continued on page 106)

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Thirty-ninth Year

OUR COURSES HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

CIVIL ENGINEER

With Michigan Registration; familiar with all public utilities such as Water, Sewer, Electrical, Paving and General Building experience to supervise various municipal departments. Must have degree from an accredited school.

Applications may be secured at the Office of the City Clerk, Municipal Building, 4373 High Street, Ecorse 29, Michigan.

AGE: 38-45
SALARY: Open
LOCATION: Michigan
Permanent Position

WANTED—CIVIL ENGINEER

Experienced in reinforced concrete design, detailing and estimating. Serve as assistant to and understudy for aging chief engineer. Good starting salary, bonus and excellent opportunity for advancement to chief engineer or manager of our engineering products department. All replies confidential.

JOHNSTON-LOUISVILLE BUILDERS SUPPLY CO.
Louisville, Ky.

SANITARY ENGINEER

Wanted for position of Engineer-Manager of sanitary district. Broad experience and complete treatment of sewage and administration required. Early availability desirable. Apply Board of Trustees, Urbana and Champaign Sanitary District, P. O. Box 18, Urbana, Illinois.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $9.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM

1115 So. Pearl St., E-371
Denver, Colo.

OWNER SALE
NEW EQUIPMENT
PRICED RIGHT

7 Coolers
8 Dorr Agitators
4 Vacuum Pumps
3 Panel Switch Boards
15 Tanks, all sizes
8 Gas Scrubbers, 15' dia. x 47'
5 Fuel Oil Tanks
1 Rubber lined Tank 10' 8 " x 18' 9"
25 Transformers
3 Steel Buildings
2 Car Pullers
10 Filters
1 Cooling Tower
4 Air Circuit Breakers
5 Motor Generators SKW
4 Pug Mills 12" x 12'
2 Mixing Propellers 20" dia.
65 Motors 1½ HP to 250 HP
65 Pumps
3 Air Motors
15 Reducers
9 Repulpers
34 Motor Starters 2 HP to 40 HP
12 Vacuum Receivers
7 Recuperators 10' dia. x 14' 11"
2 Bucket Carriers

Also many other items. Complete listing available in the immediate future.

EQUIPMENT INSTALLED BUT NEVER USED

MILL & QUARRY EQUIPMENT CO.
Baton Rouge P. O. Box 1486 Louisiana

TUNNEL EQUIPMENT

6—Ingersoll-Rand DA-35 Wet DRIFTERS, 1¼" chuck (Round) with automatic power feed, sliding cone, steel centralizer, New York Head, mounted on 48" aluminum shell with column clamps.
2—Ingersoll-Rand DA-35 Wet DRIFTERS, 1¼" chuck with automatic power feed, sliding cone, steel centralizer, New York Head, mounting for 6' steel change on pneumatic controlled DRILLING BOOM.
2—AXIVANE FANS, Model 25-¼ X 3450 complete with 15 hp. 220 volt, 3 phase 60 cycle motor, with inlet bell, inlet screens, fan supports and adapters for 24" tubing.
1—Garner Overshot LOADER, 2 cubic yard skip Serial No. 1002 mounted on Caterpillar D-6 TRACTOR—Serial No. 9U2618 wide gauge with electric starter, rigid bar and guards.

All equipment purchased new April 1949 and used for 22,000 cu. yds. tunnel excavation. Drills completely reconditioned. Fans and Loader in good condition.

W. K. McILYAR CONSTRUCTION CO.
Box 209 Gore, Oklahoma

POSITIONS WANTED
(Continued from page 105)

GENERAL CONSTRUCTION Superintendent—Executive type, all managing responsibilities, geared by practical experience. Ability to direct specialized trades and subcontractors forces. Actual job site management directing and coordinating all phases of multi, large and medium diversified projects, from inception to completion—New Buildings and Alterations, Industrial Plants, Power Utilities, Heavy Construction Facilities. Cost and Profit Conscious. Emphasis on future possibilities. Excellent references. Work service summary on request. PW-1820, Engineering News-Record.

RECENT C.E. Graduate B.S. degree (Univ. of Michigan) desires permanent position in structural design, foundation engineering, or general construction. Midwestern or Eastern states preferred. Available on two weeks notice. PW-1871, Engineering News-Record.

PATENT ATTORNEY

Patent Practice
before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, Suite 454, 815-15th Street, N. W., Washington 5, D. C.

A National Organization for
FEEDING and HOUSING
employees of Contractors - - - Railroads Industries
OLYMPIC COMMISSARY CO.
CHICAGO 6, ILL.: 302 S. Canal St. Phone HA 7-1670
SEATTLE: 316 Second Ave., South
MINNEAPOLIS: 105 Nicollett Ph. Atl 4845

"WE HAVE FED MILLIONS"
30 Years Experience in the
HOUSING and FEEDING of MEN
Valentine B. Kane & Assoc.
1410 State St. New Haven 11, Ct.

FOR SALE

One 6 cylinder MacIntosh Seymour (now American Locomotive Co.) Diesel Engine, Serial 2295, Model 6-C-46, 4 cycle, 1250 H.P. at 164 R.P.M., direct connected to G. E. 2300 Volt, A.C., 2 phase, 60 cycle 1000 K.V.A. generator and G.E. direct connected exciter complete with generator field rheostat, exciter field rheostat, lube oil pump and motor, and complete with necessary wattmeter, ampere, voltage, power factor meters and necessary current and potential transformers.

May be inspected in operation at Municipal Generating Station, Rockville Centre, N. Y., any time prior to February 10, 1950. Will be sold "as is where is", purchaser to remove prior to March 15, 1950.

Offers will be received to 2:00 P. M. February 10, 1950, by the **Commissioner of Public Utilities, Rockville Centre, N. Y.** Write for further information.

TRENCHING MACHINES

Cleve. Model 95 Wheel Type—$3200.00
Cleve. Model 110 Wheel Type
Buckeye Model C-15 & C-224
Parsons Model 310 Diesel—52" W. 16' D.
P & H Model 10-30 digs 32" W. 12' D.—$1800.00
Cleve. combination Backfill Tamper
Buckeye Model 410—8' x 24"

CRANES—SHOVELS

Lorain L-820 Shovel, almost new
Buckeye Clipper Shovel ¾ yd. bargain
Osgood Model 200 Crane ½ yd.—$3,200.00
Marion 362 Sh. & D.L. Diesel bargain

TRACTORS

Cat. D-8 & D-7 latest series
Cat. D-4 front end loader & dozers
Int. TD-14 & 9 like new with dozers
TD-18 Bulldozer—$3,200.00 bargain

SHOVEL FRONT ATTACHMENTS

Northwest Model 6
Northwest Model 25
Lorain 80 like new
Buckeye Clipper Model 70
Link-Belt LS-40
Osgood Model 200
Osgood Shovel Front
1201 Lima Standard Shovel Front
1201 Lima Hi-Lift

AIR COMPRESSOR RENTAL CO.
19615 Nottingham Road,
Cleveland 10, Ohio
Phone KEnmore 8000

For Rent
SPEEDCRANES
LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 50 ton capacities with booms 100' or more. 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.
11 West 42nd St. New York 18, N. Y.
Tel. PEnnsylvania 6-7554

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
1474 Broadway New York 18, N. Y.

SURPLUS SALE
Stewart-Warner Portable Heaters

100,000 BTU gas burning, turbine type blowers. 1½ H.P. air cooled, ball-bearing engine with 3 ducts totaling 45 ft. Heats sheds, buildings, shops and buildings under construction. Preheats engines, thaws out frozen machinery, pipelines with torrents of quick, safe heat at pennies of operating cost. Perfect running condition guaranteed. Immediate delivery—Original price $595.00. Sale price only $195.00 while they last. We sell replacement parts.

Send for literature.

ENNIS SUPPLY COMPANY
334-1st Street North
Minneapolis, Minnesota

FOR SALE

1—Euclid Loader, Model BV-3, 54" Loading belt, year 1947. Asking $12,000.
6—Euclid bottom dump 13 c.y. 190 HP, GMC motor, year 1947. Asking $9,500 each.
4—Super "C" Tournapulls with LP Scrapers, 15 c.y. Serial C3T4300 to 3T5200. Asking $6,800 each.
2—Model "C" Tournapulls with LS scrapers, 12 c.y. Serial C3T4300. Asking $5,000 each.
3—Super "C" Tournapulls with W210 tournatrailers, 13 c.y. Asking $6800 each.

All this equipment in A-1 condition. Rubber practically new.

FS-1848, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

PAVER

1—REX Model 27E, Paver, Gasoline Engine Powered, Rex Mechanical Man, Batchmeter. Can now be seen in operation. $4,000.00

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

Lightning Protection Systems
Underwriters' approved installations, or to your specifications. Send plans, specifications.

A. H. PETERSON
1029 Grove St. Meadville, Pa.

FOR SALE
ASPHALT PLANT
Cedar Rapids Speedline Model
$7500.00

FS-1874, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

L.B.SMITH INC. OFFERS

SHOVELS — CRANES

Lorain 75-B, 1½-yd shovel, crane, hoe, Caterpillar D11000. Reconditioned.
Lorain 75A, 1¼-yd shovel or crane, gas or GM diesel.
P&H Model 255A crawler shovel.
Lorain L-41, ¾-yd crawler shovel & crane.
Lorain 40 truck crane, Waukesha engine, mounted on Mack chassis.
Insley ½ yd. Model K-12 shovel, Pettibone-Mulliken dipper, Chrysler gas engine, excellent condition.

SHOVEL ATTACHMENT

Lorain 30A chain crowd, LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS #5877, new ¾-yd dipper LBS#7750.
P&H 203A, LBS#2527, 19'6" boom 13' stick ⅝-yd dipper.
Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.

BACKHOE BUCKETS

¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
28" outside width solid bottom type LBS #4377, good condition.

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd, LBS #7433, new condition.
New Lima 1-yd, Amsco, LBS#2295.
Bucyrus-Erie 1¼-yd gas air, LBS#3782, fair.
Lorain 75 manganese 1¼-yd, LBS#7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS#2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS#5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#5763.

CLAM—DRAG—SCRAPER BUCKETS

AIR COMPRESSORS

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.
Gardner-Denver, 105 foot, with air receiver, hose reel, driven by power take-off and mounted 1941 Ford.
Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver 2-stage 160 ft., skid Mtd.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels, Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

QUARRY EQUIPMENT & BINS

18 x 36 Farrell deep jaw crusher.
10 x 36 Cedarapids, practically new.
10 x 7 Allis Chal. Blake type jaw crusher.
Williams 20-S pulverizer.
Cedarapids No. 1 Kubit.
60 ton 2 compartment storage bin with clam shell gates.
New 16 x 16 double clamshell gates.
20" x 6'6" Belt Type Magnetic Separator.

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
Sterling COE Model 255GCS tandem drive tractor, 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50 x20 tires, airbrakes, outriggers, excellent condition.
Van Trailers with 17' x 7'8" x 6' bodies. Five ton capacity.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
6x6 7½-ton Reo

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New Murphy 4 and 6 cylinder diesels.
GM 6 and 12 cylinder diesels, practically new.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

Ransome 34E dual drum, new October, 1943, with 36'9" boom, 1000 gallon auxiliary water tank, Cummins engine, rebuilt.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.
Koehring 10'-16' finisher, rebuilt.

Concrete Spreaders

Blaw-Knox type SA 10'-15' spreader, new 1943. New condition.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
1300'—Blaw-Knox 8"x8" forms, with stakes.
4450—Heltzel 9"x8" forms, with stakes.
1430'—Heltzel 10"x8" forms, with stakes.
1010'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

BELT CONVEYORS

New 18"—24"—30"—36"
- "Sealed-for-life" idlers
- Lattice or channel frame
- Shipment from stock depending on length

DIESEL GENERATORS

7½ KW to 125 KW. Alternating and direct current.

GRADERS

New Warco D76 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.
York Corporation Model SR drawn grader with scarifier, 8' blade, rakes, pneumatics, wt. 7,900 lbs.

DIESEL POWERED TRACTORS

"FD" Cletrac with Buckeye blade and double drum P.C.U.

***Phone* HARRISBURG, PA. 7-3431**

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

for **IMMEDIATE DELIVERY**
of **RUBBER PRODUCTS**

CONVEYOR BELTING. TRANSMISSION BELTING. ELEVATOR BELTING. FIRE. WATER. AIR. STEAM. SUCTION and WELDING HOSE.

CALL WIRE WRITE **CARLYLE**
THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

NEW GUARANTEED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom Covers	Width	Ply	Top-Bottom Covers
48"	8	1/8" — 1/16"	24"	4	1/8" — 1/32"
42"	5	1/8" — 1/16"	20"	5	1/8" — 1/32"
36"	6	1/8" — 1/16"	20"	4	1/8" — 1/32"
30"	6	1/8" — 1/16"	18"	4	1/8" — 1/32"
30"	5	1/8" — 1/16"	16"	4	1/8" — 1/32"
26"	5	1/8" — 1/32"	14"	4	1/16" — 1/32"
24"	5	1/8" — 1/32"	12"	4	1/16" — 1/32"

Inquire For Prices — Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices — Mention Size and Lengths.

ENDLESS "V" BELTS

"A" Width All Sizes —
"B" Width All Sizes —
"C" Width All Sizes —
"D" Width All Sizes —
"E" Width All Sizes —

Sold in Matched Sets.
Inquire For Prices — Mention Size and Lengths.

SPECIAL OFFER . . . HEAVY DUTY RUBBER HOSE

FIRE HOSE

APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

I.D. Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

AIR HOSE

I.D. Size	Length	per Length	Universal Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 Pair
¾"	25 "	7.50	1.50 Pair
	50 "	15.00	1.50 Pair
1"	25 "	10.00	1.50 Pair
	50 "	20.00	1.50 Pair

LARGER SIZES ALSO AVAILABLE
All Prices—Net — F.O.B. New York

WATER HOSE

I.D. Size	Length	per Length	I.D. Size	Length	per Length
¾"	25 feet	$4.25		35 feet	$10.50
	50 "	8.00		40 "	12.00
1"	25 "	6.25		50 "	15.00
	50 "	12.50	1½"	25 "	10.00
1¼"	25 "	7.50		35 "	14.00
				50 "	20.00

Each Length with Couplings Attached

CARLYLE RUBBER CO., Inc.

62-66 PARK PLACE, NEW YORK 7, N. Y. Phone: BArclay 7-9793

ROAD FORMS
Blaw-Knox 8000 ft. 9"x9".
Blaw-Knox 10000 ft. 8"x8". NEW.

ROAD ROLLERS
B-S tandem 3 axle 10-14 tons.
Hercules 3 wheel 10 tons.

CONCRETE PLANTS AND STORAGE BINS
Butler 300 ton, 2 compt. aggregate; one compt. 400 bbl. cement complete with scales and elevator.
Bulk cement bin 350 bbls. complete. New.
400 bbl. Bulk Cement bin weight batcher. New.
Two 100 ton 3 compt. aggregate bins. Complete.
400 ton 4 compt. Blaw-Knox aggregate bin.

SHOVELS—CRANES—DRAGLINES
Manitowac 3000A, 1-3/4 yd Shovel-Dragline.
Northwest 6, Diesel Crane, 1½ yds.
P & H 150 Truck Crane, Factory mounting.
Osgood 200 Shovel-Backhoe, new 1947.
Marion Model 37 1-¾ yd. Elec. Shovel.
Page 62B Dragline, Diesel, 6 yds., 135' boom.
Buc-Erie Model 54B 2½ yd. Diesel Shovel.
Buc-Erie 37B Diesel Crane, 100' boom, 35 tons.
Lorain Model 82 Diesel Shovel, 2 yds.
Lorain Model 82D Diesel Crane, 40 ton cap. 90' bm.
P&H Model 1055 Diesel Dragline, 80' boom.
Lima 1201 High Lift Diesel Shovel.
P&H Model 1055 High Lift Shovel, Buda Diesel
Northwest 80D 2½ yd. Diesel Shovel, 1946.
Byers Model 83 Shovel and Crane, 50' Bm.
P&H 855B 2 yd. Diesel Shovel. New Feb. 1947.
Buc-Monighan 6 to 8 yds. Diesel Dragline.
Buc-Erie 120B 4 to 5 yds. Elec. Dragline.

GRADERS—MIXERS—FINISHERS
Galion Model 101 Grader.
Adams Model 412 Motor-Grader.
Austin-Western Model 99-M Auto Patrol Diesel.
Barber Greene Asphalt Spreader Model UD6.
B-G Model 879 Asphalt Finisher with extensions.
Adnun asphalt paver.
Koehring Model 34-E Twin Batch Paver.
Koehring longitudinal Finishers 20-24 ft.
Rex 3 yd. Transit Mixer on Int. 2½ ton chassis.
3 Ransome 4½ yd. Hi-dump transit mixers.
2 Jaeger 5 yd. transit mixer, unmounted.
Jaeger 2-yd. Transit Mixer on Mack 38

TRENCHERS
Barber-Greene Model 44C.
Parsons Model 200 wheel type approx. 2 yrs. old
Buckeye Model 160 Capacity 16' deep 42" width
Cleveland Trencher Model 95.

ASPHALT PLANTS
Masden 3000# capacity. Complete.
Cedar Rapids "Speedline". Complete.
Cedar Rapids Model B. Complete.
Barber-Greene Model 848 "Travel Plant".
Barber-Greene 842 Portable Utility Plant. Complete

STIFF LEG AND GUY DERRICKS
American stiff leg 40 to 50 tons 80' boom.
American Terry Steel stiff leg 100 ton 75' boom.
American 20 ton stiff leg 90' bm.
American 15 ton stiff leg 65' boom.
Wiley Mod F. stiff leg 60' bm. NEW.
Kettler 25 ton steel Guy 100' mast 90' boom.
Stiff leg derrick 15 tons 100 ft. boom.

ROCK CRUSHING & SCREENING PLANTS
Cedar Rapids Junior Tandem plant. New 1947.
Cedar Rapids Portable "Pitmaster". Complete.
Pioneer Model 56 Portable Crushing Plant.
Cedar Rapids 2-A Portable Crushing & Screening

PUMPCRETES
REX 160-180-190-200 with fittings.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

READY MIXED CONCRETE PLANT

1—Complete READY MIXED CONCRETE PLANT—Blaw Knox Including the following: 800 barrel bulk cement bin, 100 ton per hour bucket elevator with unloading screw for handling bulk cement; Model 84-S Ransome Mixer (less than 2 years old); 100 ton three compartment aggregate bin complete with cement and aggregate weighing batchers; electric powered gantry and whirley for charging bins, with 2 cu. yd. Clamshell Bucket. Plant in daily operation and can be inspected in the Philadelphia district. Available on or before September 1, 1948. Offered subject to prior sale or commitment.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE

BUCKETS

Distributors for Pettibone Mulliken Corp. Clamshell-Dragline-Dipper and Pull Shovel Buckets.
1—Lorain 77, Comb. Shovel-Crane Gas.
1—Lorain 40A Truck Crane 10 wheel
1—Lorain 40 Truck Crane 6 wheel
1—Browning Truck Crane with 39" magnet.
1—Haiss Wheel Loader Model 80W
1—Haiss Creeper Loader Model 77C
1—Haiss Creeper Loader Model 27

VAN HOUTEN MACHINERY CO.
908 Van Houten Ave Clifton, N. J.

TRUCK CRANE

Rebuilt Northwest Model 25 Truck Crane mounted on 10-wheel Mack complete with outriggers.

SALE or RENT

HODGE & HAMMOND, INC.
1100 E. 156th Street
New York 59, N. Y.

Browning 15-ton 10-wheel single motor, rubber tired wagon crane, 25' boom with 10' insert

Location vicinity of New York.

HOISTING MACHINERY CO.
50 Church Street New York 7, N. Y.

FOR RENT OR SALE

LORAIN 79 Diesel 1¼ cy Shovel
CATERPILLAR D-7 hydraulic & cable Bulldozers
INTERNATIONAL TD-18 hydr. & cable Bulldozers
INTERNATIONAL TD-14 hydraulic Bulldozers
INTERNATIONAL TD-6 hydraulic Bulldozer
ALL LATE MODELS FULLY REPAIRED
BENDIX MACHINERY CO., INC.
401 Broadway, New York 13
Tel: Canal 6-5693

COAL PULVERIZER: One NEW, UNUSED, Babcock & Wilson, capacity 7500 lbs., of coal per hour, 125 H.P. motor, complete.

VIBRATOR FEEDERS: Jeffrey No. 5 with heavy duty pan 4' x 5'.
Syntron type F-45, pan 36" x 5'8".
Both the above with electrical equipment. New condition.

DIESEL LOCOMOTIVE: Plymouth 25 ton, standard gauge, D-17000 motor, air brakes.

TRUCK LOADER: Haiss model 75-C, heavy duty, gasoline powered, rebuilt.

SHOVELS & DRAGLINES: 1—Bucyrus Erie 120-B, 4 yd. rock dipper, with or without dragline attachments, and one 85-B, 3¼ yd. rock dipper, 2200 volt, A.C., Ward Leonard Controls. 1—Monighan Walker Dragline, 9-W, electric 200 ft. boom, 8 yd. bucket. 1—Lima 1201 Diesel Shovel, 3 yd. capacity.

DIESEL TRUCKS: 1947 Euclid, 22 ton, model 13TD, end dump rock bodies, 275 H.P. Buda diesel motors.

BLAST HOLE DRILLS: Bucyrus Erie 29-T Electric, 440 volt, and one NEW gasoline driven; both with 9" bits and tools.

Bucyrus Erie 42-T electric, 9" bits and tools, built-in wrenches, 220/440 volt, Loomis #44 electric, traction wheels, 6" bits and tools.

GYRATORY CRUSHERS: All sizes 8" x 30" to 42" x 134".

JAW CRUSHERS: All sizes 4 x 6 to 48 x 60".

REDUCTION CRUSHERS: Symons 2 ft., 4 ft. and 5½ ft. short head. Telsmith 3 ft. and 4 ft. All with or without motor and drive.

MINE HOISTS:

1—All steel, drum 8 ft. dia., 1½" rope, 64,000 lbs. single line pull, 600 FPM, 400 H.P., 2200 volt, A.C., with all control equipment.

1—600 H.P., single drum, 8' x 12', with motor 2200 volt, A.C. and controls.

1—250 H.P., single drum, 7'3" x 5", 30,000 lbs. single line pull, 750 FPM, complete.

1—150 H.P., double drum, 38" dia., 42" face, 440 volt, A.C. complete with controls.

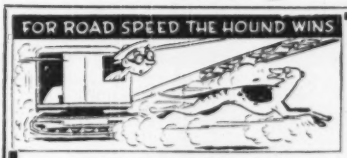
A. J. O'NEILL

Lansdowne Theatre Building

LANSDOWNE, PA.

Phila. Phones: Madison 3-8300 — 3-8301

FOR ROAD SPEED THE HOUND WINS



You can BUY or RENT torch type concrete heaters, hot water type, oil burning salamanders, boilers, etc. from E.C.A.

CRAWLER CRANES, DRAGLINES AND SHOVELS

1—2¼ yd. Mdl. K570 Link Belt Diesel Crawler Crane #2215, with 50-65-70 or 85' boom and 17'6" ifb. high gantry, hydraulic controls, D17000 engine. Will handle 47½ ton. Weight 148,000#.

1—1¾ yd. Link Belt Model K370, Ser. No. 2247, equipped with 70' boom, powered by Cat. D13000 Diesel engine.

1—⅝ yd. Lorain Model 80, No. 10750, with 65' boom, powered by Waukesha-Hesselman diesel engine.

1—1½ yd. P&H Model 655-A, combination shovel, dragline and crane, Ser. 6426, powered by Caterpillar Model D13000 Diesel engine. Crane boom 75', shovel front 24' boom, 18' sticks, 1½ yd. manganese dipper.

1—1½ yd. Link Belt Model K360, Ser. No. 1959, powered by Caterpillar D13000 Diesel engine with 65' boom. Also has back hoe attachment, boom 25' scoop arm 8'9", pull shovel mast 11'9", with 1½ yd. dipper.

1—1¼ yd. #5 Northwest Ser. No. 4564. Powered with 6 cyl. Wisc. Model D84 gasoline engine. With 60' boom.

1—1¼ yd. Link Belt Model K38 crawler crane, Ser. No. 1526. Powered with 4 cyl. Model WL-51 ft Waukesha gasoline engine with 50' boom.

1—1 yd. Erie Gas-Air Model GA-2 combination shovel and crane, Ser. No. 10679, powered with 4 cyl. Waukesha Model WL55 gasoline engine, with 47' crane boom. Shovel boom 22', sticks 17' with ¾ yd. dipper.

2—⅝ yd. Koehring Model 301, Ser. Nos. 544, and 840. Powered by 4 cyl. Wisconsin Model M gasoline engines. With 40' boom.

1—¾ General Model 307, Ser. No. 2575, powered by 71 HP 8 cyl. Chrysler Industrial engine, with 40' boom.

2—⅝ yd. Buckeyes, Model 70, Ser. Nos. 5409 and 5411, with 40' boom, powered by 71 HP Chrysler Industrial gasoline engines.

WE OWN 15 CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

DERRICKS

1—50 ton American Model 28-100 all steel guy derrick, Ser. No. 1184, with 115' mast, 100' boom, 16' bullwheel. Capacity 50 tons at 38' and 20 tons at 88' radius.

6—30 ton Wiley BRAND NEW stiffleg derricks, 32' mast, 60' boom, 12' bullwheel. Cap. 30 tons at 38' radius.

AIR COMPRESSORS

Portable and stationary, electric diesel & gasoline power, sizes from 2 cu. ft., 1,000 cu. ft.

TRUCK CRANE

½ yd. Universal Crane #873, with 25' boom, mtd. on 10 wheel Hendrickson power truck crane.

LOCOMOTIVE CRANES

1—35 ton Ohio, Mdl. G, Ser. No. 3950, boom 50', ASME boiler, cast steel trucks, outriggers.

1—15 ton Link Belt Ser. # 678, ASME boiler, 45' boom. Bargain.

LOCOMOTIVE

1—15 ton Vulcan std. ga. locomotive, Ser. No. 3903. With special MCB couplings. Powered by 6 cyl. LeRoi Mdl. 4MS gasoline engine. Equipped with 4 wheel air operated brakes with 2 cyl. Westinghouse air compressor. Complete with starter and generator.

PARTIAL LIST ONLY—SEND FOR NEW STOCK LIST—JUST PUBLISHED

All this equipment is owned by us and may be inspected at one of our plants.

WE BUY—REBUILD, SELL AND RENT.

Schaff Bldg., 1503 Race St.
PHILADELPHIA 2, PA.
Phone Rittenhouse 6-4664

1155 So. Washtenaw Ave.
CHICAGO 12, ILL.
Phone NE vada 8-2400

30-J Church St.
NEW YORK 7, N. Y.
Phone Worth 2-0036

P.O. Box 933-J
PITTSBURGH 30, PA.
Phone Federal 1-2000

EQUIPMENT CORPORATION of AMERICA

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.
2637 Southwest Blvd. **Kansas City 8, Mo.**
Phone Valentine 4740

SUPER SALE

Multi-use Portable Gas Saw

Cuts any length lumber to 4" thick. By interchanging abrasive blades saw cuts brick, concrete blocks, flue lining, tile and metal sheets, steel pipe & other tough to cut materials. Does work of $1000 worth of saw equip. Was $596, now super bargain priced at $295. Brand new, shipped in original crates pre-paid from either Milwaukee, Wis. or Mpls., Minn. complete with steel & abrasive blades.

LIMITED SUPPLY
send for literature

ENNIS SUPPLY CO.
334 1st St. N., Minneapolis 1, Minn.

AIR COMPRESSORS
17 Diesel 315, 500, 630, 900 & 1500 Ft.
22 Electric 676, 1000, 1302, 1730, 2200 & 3178 Ft.
11 Low Pres. 743, 1080, 2200, 3000 & 6040 Ft.

CRANES — SHOVELS — DRAGLINES
7—Diesel & Steam Locc. Cranes—20, 25, 30 & 40 T.
9—25, 40 & 60 Ton Steam & Elec. Whirley Cranes
2—41B Bucyrus 1-½ Yd. 50' Boom Steam Cranes
2—3300 Manitowocs, 2½ Yd. Diesel Shovels Drags.
54B Bucyrus, 80B Northwest Diesel Shovels Drags.

TUNNEL EQUIPMENT
33—Conway, Eimco & GArdner Denver Tnl. Shls.
26—Battery & Trolley Locomotives, 4, 6, 8 & 10 Ton
266—Tunnel Cars, ½, 2, 4, 6 & 8 Yd. Cap.

RAILROAD CARS
164—Dump Cars 1½, 2, 3, 5, 16, 20 & 30 Yd. Cap.
96—10,000 Gal. Tank Cars—100 Box Cars
128—40 & 50 Ton Flat Cars—68—50 Ton Gondolas

LOCOMOTIVES
17—Diesel 100, 80, 65, 45, 30 & 10 Ton
42—Gasoline 50, 25, 20, 16, 10 & 6 Ton

HOISTING ENGINES
STEAM: 14x12, 9x10, 8½x10 & 7x10
ELECTRIC: 30, 40, 60, 80, 100, 125 & 150 H.P.

PILE HAMMERS & EXTRACTORS
9—McKiernan-Terry No. 3, 5, 6, 7, 9B3, 10B3, 11B3
Vulcan 800 Extractor & Vulcan #2 & 1 Hammers

PUMPCRETE
Model 160, 190 & 180 & 200 REX Pumpcretes
3—7-10 Ton Guy 85' & 50' Ton 100'

STEEL DERRICKS
2—Clyde 15 ton Stiff Leg 100 & 125' Boom
2—Terry 25 ton 100' Boom Guy Steel Erectors

STEEL STORAGE TANKS
14—5,000, 35,000 & 80,000 bbl. cap.
17—10,000-15,000 & 25,000 & 42,000 gal. cap.

R. C. STANHOPE, INC.
60 E. 42 St., Tel: MUrrayhill 2-3075, N. Y.

Scoopmobiles & Buggymobiles

NEW & USED
For Sale or Rent

HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

FOR SALE

LOCOMOTIVES

2—Plymouth 8-ton, Std. Ga. Gas
2—Whitcomb Gas, 6 ton, 24" gauge
1—Plymouth 25 ton, Diesel, Std. Ga.
2—Vulcan 30 ton, Diesels, Std. Ga.
1—Baldwin 100 ton Diesel-Electric, Std. Ga.
1—American 100 ton, Diesel-Electric, Std. Ga.
1—Plymouth 44-ton Diesel-Electric #4347
1—G.E. 70 ton Diesel-Elec. 4-Motor—35000#T.E. #13199.

COMPRESSORS

2—IR 2000', 3/60/2200
2—Chi. Pneu. 1100', 1/60/220
1—IR 6000', 3/60/2200—Low pressure

DERRICKS

1—American S.L. 100 ton, 110' boom
2—American S.L. 10 ton, 75' boom
1—American 20 ton Stiff Leg—135' boom—complete with American 250 H.P. 3 Drum Gas Hoist with Swinger
1—Ingram, 4 ton S.L. 50' boom. New.

CARS

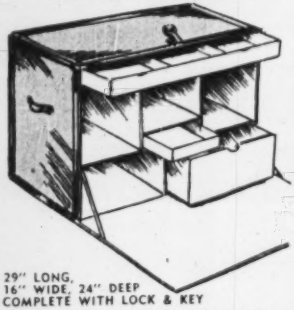
28—Western 20 yd. Air dump

CRANES

5—Late Model Steam Locc. Cranes—25-30-35-ton, oil fired, American and Ohio.
1—Browning, No. 8, 20 tons, oil fired
1—Bucyrus-Erie Diesel 48-B C & D—100' boom—#12411
1—American Type 500—3 yd.—100' boom—Gas—#G5—272. Rare Bargain.

ROBERT H. BOYER
2005-13 W. Bellevue St., Phila. 40, Pa.
Phone Sagamore 2-7132

U. S. ARMY ENGINEER'S FIELD DESK



29" LONG,
16" WIDE, 24" DEEP
COMPLETE WITH LOCK & KEY

A sturdy iron bound chest with lid that serves as drawing board or desk, has compartments and drawers for records etc. Has hundreds of uses. RECONDITIONED.

• ENGINEERS • SURVEYORS
• PAYMASTER • SUPERVISORS

Cost Over $52.50 **$7.95** 2 For $15.00

Ship. EXPRESS or MTR. FRT. F.O.B. PHILA.

BRAND NEW U. S. NAVY WADING OR MUCKING SUITS

COVER ALL

WATERPROOF—UNSINKABLE

Protects your men when working in flooded excavations and ditches or when there is danger of stepping into deep water. Suit comes with inflateable air cells, attached rubber gloves and boots. Made of heavy rubberized duck.

REGULAR $40.00 VALUE **$8.95**

F.O.B. PHILA.

NEW U. S. ARMY ALL RUBBER WATER PROOF ARTICS

Sturdy construction, slip proof soles, reinforced seams.

SIZES 6 to 12

4 BUCKLE $4.35
5 BUCKLE $4.95

SHIP CHG. 50¢ EXTRA

J. JACOB SHANNON & CO.
214 N. 22nd St., Phila. 3, Pa.
THE OLDEST EQUIP. HOUSE IN PHILA.

FOR SALE or RENT ALL LATE MODELS

1—N. W. Shovel, 2½ c.y. new Oct. 1946
1—N. W. Shovel, 1½ c.y. new April 1946
1—Allis Chalmers Tractor Model HD19H, new May 1948
5—D W 10's—used 2500 hours
1—Caterpillar Auto Patrol #12—9K4626
1—Caterpillar D8 Angledozer #8R8933
1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.
Box 145, Middle River, Baltimore 20, Md.
Phone: Essex 1310

REX TRUCK MIXER

4 Yard TM 403 — On Mack Chassis 6BX1SH1338—in Good Working Condition $2500.

CONCRETE CARRIERS INC.
800 Passaic Ave. East Newark, N. J.

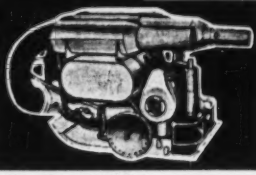
HERMAN NELSON Portable Heaters

250,000 BTU's

Complete with air-cooled gas engine, one 12-inch x 24-ft. duct, and, six 8" x 14-ft. ducts.

SALE PRICE ONLY $295.00

HEAT PORTABLE HEATER SALE!



100,000 BTU PORTABLE
HEATER and DRYER

Stewart - Warner portable, powerful 100,000 BTU gasoline-burning Heaters, with Turbine type blowers; 1¾ hp air-cooled, ball-bearing engine; 3 ducts (45-ft. total). IMMEDIATE DELIVERY.

SALE PRICE **$195.00**

Excellent Operating Condition Guaranteed

HEATING Buildings, shops, sheds, barns, warehouses, tunnels, bldgs. under construction, spot-heating, etc.

DRYING Plaster, paint, grains, mortar, concrete. Torrid blasts of heat.

PRE-HEATING Engines, tractors, trucks, equipment, etc.

THAWING Frozen areas, machinery, pipelines, tanks, etc.

• VAST QUANTITY OF REPLACEMENT PARTS
• Also SERVICE MANUAL & PARTS CATALOG

PHONE COLLECT—your Heater can be shipped within 2 hours, or SEND FOR LITERATURE

BERNSTEIN BROS.
Phone 8404 • "Since 1890" • PUEBLO, COLO.

FOR SALE

35 ton Vulcan saddle tank Loco New 0-6-0 42" (1.067 m) gauge, oil burner
30 ton Whitcomb Diesel mechanical Loco New 1943 Standard gauge (1.435 m)
25 ton General Electric Diesel electric Loco New 1943 standard gauge (1.435 m)
45 ton Whitcomb Diesel electric Loco New 1943 36" (0.914 m) gauge
10 All steel Koppel cars 5 cu. yd. capacity
3 All steel Clark drop door 30 yd. dump cars

All equipment carries used equipment warranty

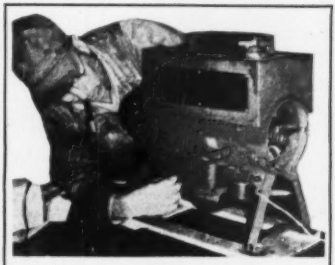
HYMAN-MICHAELS COMPANY
122 So. Michigan Ave. Chicago 3, Ill.

FOR SALE

1—Marion ¾ c.y. shovel 1942 Model 331 with Backhoe attachment complete.
1—Adams Grader, 1941 Model #303-H-371.
1—Adnun Black Top Paver—12-ft. spread Model D 226 P 3, Serial #1014.
1—Hough Payloader—Model H.L.A. International Gas Engine 60" Bucket.

All equipment recently overhauled and in first class condition, attractively priced. Further details upon request.

E. B. McGURK, INC.
P. O. Box #630 355 Barbour Street
Hartford, Conn.
Telephone—Hartford 7-7106
S. F. Mitchell, Pur. Agent



SPACE HEATERS

War Surplus Bargain

New-Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel
—Electric blower—12 V. DC or 110 V. AC using small transformer.

Portable, Quick, Clean Heat

Ideal for work under construction, emergency heat or auxiliary heaters.

$95.00 each

•

Crated in Original Export Boxes

•

Telephone FRanklin 2-4028

Clapp, Riley and Hall Co.
14 No. Clinton St. Chicago 7, Illinois

FOR SALE

MODEL 307 GENERAL TRUCK CRANE, 18 ton capacity, mounted on 10 wheel 6 cylinder BQ Mack, air brakes, 90' main boom, excellent condition, $9,000.00 f.o.b. New York City.
TRUCK CRANE MOUNTING, 10 wheel, 6 cylinder BQ Mack, reinforced by Mott-haven, air brakes, perfect condition, $2,000.00, f.o.b. New York City.
15 TON STEEL STIFF LEG DERRICK, 90' boom, $1,900.00, f.o.b. New York City.
2 DRUM DIESEL HOISTING ENGINE AND SWINGER, new, in crates, 75 h.p. 7,500 line pull, $2,500.00, f.o.b. New York City.

KARL KOCH
362 Casanova Street, Bronx 59, N.Y.
DAyton 9-7474

New Guaranteed . . . 60 TON HYDRAULIC JACKS

Navy Surplus
ILLUSTRATED CATALOG 60% off
BERKELEY DISTRIBUTORS INC.
16 JOHNSON AVE. HACKENSACK, N. J.

GRADER AT SACRIFICE

New Adams 512 Tandem diesel motor grader with canopy top and enclosures, 12' moldboard and V type Scarifier.

HODGE & HAMMOND INC.
1100 E. 156 St. New York 59, N. Y.

FOR SALE

1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00

Phone Williams 1-8600
Hillsgrove, Rhode Island

SHOVEL, CRANE & CLAMSHELL

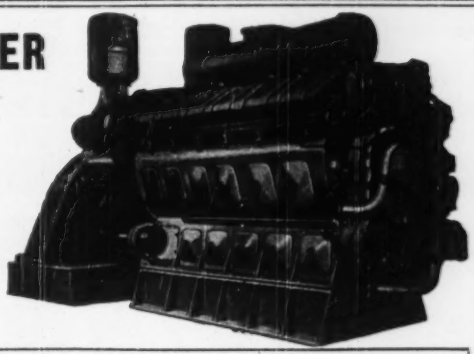
1—BUCYRUS-ERIE, Model 10B, Combination Shovel, Crane and Clamshell, Powered with a Buda Gasoline Engine. Excellent condition and ready to go to work.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

DIESEL ELECTRIC POWER

FOR

IMMEDIATE DELIVERY



OTHER DIESELS AVAILABLE
UNIT CAPACITIES—10 TO 1875 KVA
A.C.—50 AND 60 CYCLES
ANY VOLTAGE

A PARTIAL LIST OF OUR INVENTORY

KVA	MAKE	MODEL	HP	RPM	KVA	MAKE	MODEL	HP	RPM
1875	Fairbanks Morse	33E16	2000	300	330	Superior	KNA	396	514
1420	Fairbanks Morse	38D8 1/8	1600	720	312.5	General Motors	8-268A	450	1200
1250	General Motors	16-278A	1600	720	312.5	Clark	MD-4	375	327
937.5	General Motors	12-567	1080	720	200	Buckeye	80	240	600
625	Alco	6-12 1/2-13T	750	600	187	Ingersoll Rand	S	225	514
475	Baldwin	VO-6	585	514	125	General Motors	3-268A	150	1200
375	Enterprise	DSG-6	450	450	75	General Motors	6-71	90	1200

WRITE FOR COMPLETE INFORMATION

Engineered AGSCO DIESEL POWER

A. G. SCHOONMAKER Company, Inc.

ESTABLISHED 1898

Diesel Engines · Power Machinery

DIESEL DIVISION 50 CHURCH STREET, NEW YORK 7, N. Y.

100-Late Model Cranes

Reconditioned (Like New)

Insley ½ yd.	$4500.00
P & H ½ yd.	4500.00
Osgood ½ yd.	4500.00
Byers ½ yd.	4000.00
P & H ¾ yd.	7500.00
Marion w. shovel ¾ yd.	9000.00
Buckeye w. shovel ¾ yd.	6000.00
Quickway Truck Crane	6000.00

Many others (as is) at low prices.

ELLIS-NOVACK COMPANY

2510 W. Empire Ave. Burbank
Charleston 8-1641 Calif.

FOR SALE

10 P&H 300 AMP. ELECTRIC ARC WELDING MACHINES, 440 volt, on steel wheels, excellent condition, $70.00 each, f.o.b. New York City.

5 MOGUL METALLIZING GUNS, perfect condition, $100.00 each, f.o.b. New York City.

5 NELSON STUD WELDERS, complete with gun and quantity of studs, excellent condition, $100.00 each, f.o.b. New York City.

KOCH

362 Casanova St., Bronx 59, N. Y.
DAyton 9-7474

For Sale at a Bargain Price

2—D8 Tractors 8R Series
1—D7 Tractor 7M Series
1—D8 Tractor 1H Series

All in good working condition, equipped with LeTourneau equipment.

1—Lima Model 750, 1¾ yd. diesel, air control, excellent condition.

1—Osgood Model 800, 1½ yd. diesel, air control, excellent condition.

TUCKAHOE CONSTRUCTION CO.
116 Columbus Avenue, Tuckahoe 7, N. Y.

PUMPCRETES

1—REX PUMPCRETE, Model 160 Double, Completely Overhauled. Gasoline Engine Driven, Latest Model Machine with Selective Drive Transmission, with approximately 1,000 lin. ft. 7" Pipe.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

WHOLESALE PRICES—

PNEUMATIC TOOLS

NEW OR REBUILT

ELKIN 3263-81 ST. JACKSON HTS., N. Y. HA-9 7810

SALE or RENT

1—50' Link Belt Crane Boom. New
1—½ yd. Insley K12 Crane.
1—¾ yd. Koehring 304 Crane
1—80D Northwest-Diesel S. & C.
1—1¼ yd. Manitowoc 3000A Shovel & Dragline
2—10-ton American Terry all steel Stiff Leg Derricks
1—25-Ton Ind. Diesel Loco Crane Model 5
1—30-ton Browning Steam Loco Crane 1944
1—30-ton Plymouth Std. Ga. gas. Loco. 1943
1—44-ton G.E. Diesel Elec. Loco

B. M. WEISS COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.
Rittenhouse 6-2311

FOR SALE

2 Koehring Gantrys Convertible to Caterpillars

FS-9630, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

PUMPS AT SACRIFICE

Factory New Barnes Centrifugal Pump
Sizes 1½" to 6" and
Barnes Single Diaphragm Pumps
Immediate delivery

HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

FOR SALE *CHEAP*

2—New D-13,000 Caterpillar Diesel Engines, 150 H.P. Complete with Clutches and Pulley-drives.
1—Schramm Diesel 315 cu. ft. 2 stage comp. 1947.
1—LeRoi Diesel 315 cu. ft. 2 stage compressor, pneumatic tires, new 1946.
1—50 ton Porter Loco 0-6-0 Std. gauge.

HARRY C. LEWIS
899 East Grand Street Elizabeth, N. J.

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

Our Craftsmen do

INSTRUMENT REPAIR AND OVERHAUL

- Complete department—handles all makes.
- Experienced craftsmen do all work.
- Includes thorough overhaul, cleaning, oiling and adjustment.
- Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

INSTRUMENTS FOR RENT

We rent transits and levels on a monthly or yearly basis. Reasonable rates. All instruments are fully guaranteed in first class working order.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

FROM STOCK
Brand New & Rebuilt

TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

TRANSITS - LEVELS

All Makes Repaired - Rebuilt - Parts - Sold - Rented - New or Used

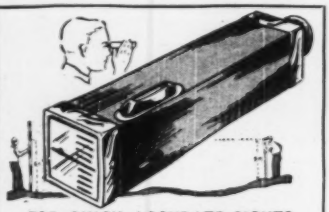
CIRCULAR GRADUATING at New Higher Accuracies is Now Available - quickly, Economically - with our new circular graduating engine. *Ask for Prices.*

ALL WORK GUARANTEED
BRUNSON INSTRUMENT CO., INC.
1405 Walnut St., Kansas City 6, Mo.

LASTING **BRUNSON** ACCURACY

QUALITY REPAIRS

by the makers of the
WORLD'S QUALITY SURVEYING INSTRUMENTS
Since 1871
C. L. BERGER & SONS, INC.
37 Williams Street, Boston 19, Mass



FOR QUICK ACCURATE SIGHTS
NEW IMPROVED HAND

SIGHTING LEVELS

For preliminary survey. Ideal for builders, laying drains, roads, foundations, etc. Has thousands of uses. Comes with instructions.

SPECIAL LOW PRICE **$1.85** SHIP. CHG. 15¢ EXTRA

J. JACOB SHANNON & CO.
214 N. 22nd St. PHILA. 3, PA.
THE OLDEST EQUIP. HOUSE IN PHILA.

SURVEYING INSTRUMENTS REPAIRED

Send your transits and levels for complete overhauling and reconditioning by experienced factory-trained mechanics. Examination and estimates without cost. Your instrument should be sent express prepaid for a prompt repair estimate.

J. H. WEIL & CO.
1325 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

GURLEY

SURVEYING INSTRUMENTS
NEW • REBUILT

Replace your platinum wire or spider web reticle with the new Gurley *glass* reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Fulton St. Station Plaza, Troy, N. Y.

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or *take them in trade.* A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 01.

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

SPECIALIZED REBUILDING

of surveying and engineering instruments
All makes and models expertly repaired in modern shop. All work guaranteed.

USED REBUILT INSTRUMENTS
for sale or rent

ROY D. HICKERSON
36 JOHNSON AVE INDIANAPOLIS 19, IND.

ALL MAKES

RE-BUILT REPAIR RENT REAL EXPERTS

BUFF

69 Day St., New York

WANTED

WANTED
Highway Widening Machine
"STONE THE CRANE MAN"
415 Brainard Ave. Detroit 1, Mich.
Temple 1-2515

Compressors Wanted

STATIONARY - PORTABLE
LARGE OR SMALL

L. W. BAUER
22 Barnett Street Bloomfield, N. J.

WANTED
Hydraulic Bulldozer Attachment For International TD-14 Tractor.
A. S. WIKSTROM, INC.
Skaneateles, N. Y.

Wanted
SINGLE-DRUM HOIST

Single-line pull 5,000 pounds at 100 to 200 feet per minute; mounted with and driven by a 3-phase 440-volt 60-cycle 30 H.P. induction motor. Write

M. S. HOGAN
City of West Plains, Missouri

WANTED
3 UNIONMELT MACHINES
Type U Heads: 1,000 or 1,500 amp.
INDUSTRIAL PLANTS CORP.
50 West Broadway, New York 7, N. Y.
Barclay 7-4185

WANTED
40—50 Ton DIESEL LOCOMOTIVE CRANE
W-1873, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

BUY *DEPENDABLE* USED EQUIPMENT

FROM A DISTRIBUTOR WITH REBUILDING "KNOW-HOW"

TRACTORS

International 1948 TD24 with new Bucyrus Erie P-29 PCU and Cable Bulldozer (Rebuilt and Guaranteed).....$16,500

2—International 1948 TD18 Tractors with Bucyrus Erie Bulldozers .....$9500 ea.

International TD14 and Bucyrus Erie bulldozer $2900

Caterpillar 1947 D6 Bros Hydraulic Angledozer (1600 hrs.) $8500

COMPRESSORS

Ingersoll-Rand 1941 315' Portable 4 Solid Rubber $1000

Ingersoll-Rand 1940 500' Portable 4 Pneumatics $2500

Ingersoll-Rand 310' Portable 4 Steel Wheels $250

BUY OF THE MONTH

Hough Model HL Payloader 1948 Powered by gasoline engine. Excellent condition F.O.B. New York City....$4995.

PILE HAMMERS

McKiernan Terry #6.....$550

McKiernan Terry #7.....$700

PUMPS

Jaeger 10" 200M Hercules Gas Engine $850

TRUCK MIXERS

8—Jaeger 4 yd. horizontal with Hercules gas engine and starter, rear operating controls, two speed transmission, new blades and buckets, thoroughly overhauled—$1,950 each.

CRANES—SHOVELS—HOES

Lorain TL20 Crawler Crane. Waukesha gasoline engine. 30' boom and tagline, 15' extra boom sections. New November 1948. Dragline Fairleads. Exc. Cond. $9500

Insley 1946 Model K-12 ½ yd. Backhoe Crawler Mounted $6500

Unit ½ yd. Crane Model 514 mounted on crawlers with 25' boom Rud-O-Matic Tagline powered by Chrysler gasoline engine with electric starter. New 1947. Good condition $6500

MISCELLANEOUS

Shovel Fr. Ch. Crowd for Lorain 40..$1100

Koehring 11S concrete mix. 2 pneu. tires $1100

Jaeger 11S mixer. 2 pneumatic.....$1050

EXPORT SERVICE — SUBJECT TO PRIOR SALE — IMMEDIATE DELIVERY

Distributors of: Thew-Lorain Cranes & Shovels - International Harvester Tractors—Chain Belt "Rex." Equipment—Barber-Greene Bituminous & Material Handling equipment—Adams Graders—Hough Pay-loaders and others.

EHRBAR

SINCE 1904

UNION, N. J. Unionville 2-7400

BROOKLYN, N. Y. Evergreen 3-5000

WESTBURY, L. I. Westbury 7-1990

HEAVY EQUIPMENT

100 ton Baldwin diesel elec. locomotive, 660 HP. New 1942.

35 ton Ohio Type G locomotive crane, built 1943. Buda engine.

30 ton Davenport diesel locomotive new 1942. Cat. D17000 engine.

600 CFM Chic. Pneu. 2 stage, 125 HP, elec. air compressors, built 1945.

MISSISSIPPI VALLEY EQUIPMENT CO.

509 Locust St. St. Louis 1, Mo.

SHOVELS & CRANES

1—Northwest Model 78D—2 yd. diesel shovel

2—Northwest Model 25—crawler crane, shovel, Pullshovel

2—Northwest Model 6—shovel and crane

1—Lorain 1¾ yd. diesel shovel

1—Lorain 2 yd. diesel shovel

1—Quickway Model J Crane on GMC truck

1—Northwest Model 80-D 2½ yd. diesel shovel

HODGE & HAMMOND, INC.

1100 E. 156 St., New York 59, N. Y.

DIESEL GENERATOR PLANTS

COMPLETE WITH SWITCHBOARDS

1000 KW TO 100 KW STATIONARY AND PORTABLE

AT GREATLY REDUCED PRICES NEW UNIT GUARANTEE

HERCULES ELECTRIC MACHINERY and EQUIPMENT CO.

Telephone NEvada 6-2808 — 1412 So. Alameda Street

Cable Address HEMCOY — Compton 1, Calif.

DEPENDABLE USED MACHINES

SPECIAL,—Pioneer 305-W gravel crushing and washing plant, one year old

Bay City 25 dragline
Byers 83 dragline
Osgood 200 backhoe
Pioneer 4x8 screen
RD-7 with bulldozer

Silent Hoist Krane Krawler
Browning 20 ton erectors crane
B-G 24"x40' port. conveyor
Pioneer 42"x14' apron feeder
Pn. tired front end loader

Hercules DJXC power unit
Morris 10" gravel pump
Jaeger 7H builders hoist
Universal truck crane
Badger port. gravel plant

For rent,—15 current model Bay City cranes, shovels and backhoes.

3505 W. 51st St. — TRACTOR & EQUIPMENT CO. — Chicago, 32

EARTH DRILL

1—New BUDA Earth Drill, Model HBJ. Powered with Gasoline Engine, including electric starter. Automotive type transmission provides 4 speeds forward, one in reverse. Hydraulically controlled. Tower lowers to horizontal traveling position.

FURNIVAL MACHINERY CO.

54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE

1—N. W. Shovel

1½ c.y., Diesel New, never been used.

A. V. WILLIAMS

Box 145, Baltimore 20, Md.

Phone: Essex 1312

NEW and REBUILT

STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge

GREENSBURG MACHINE CO.

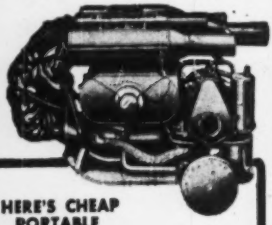
Greensburg, Penna.

HERMAN NELSON HEATERS

250,000 BTU's per hour

Overhauled, Painted, Testrun and packed in new crates.

Complete with one 12" duct and six 6" ducts. Chipping weight 450 lbs. **Price $395.00** each f.o.b. Detroit, or York, Pa.



HERE'S CHEAP PORTABLE

HEAT FOR ALL

Portable Heaters expedite Winter work at small cost! Emergency heat for any purpose. **DRIES** concrete, plaster, grain, paint, lumber etc. **STARTS** cold motors, trucks, tractors, airplanes etc. **THAWS** frozen materials, plumbing, machinery and men.

These Stewart Warner war surplus pre-heaters produce 100,000 B.T.U.'s per hour on 1½ gallons gas and deliver same anywhere thru three long ducts. Starts like outboard motor. Order now...Supply limited. Spare parts available.

Enclose check or money order or send 1/3 deposit, balance C.O.D. with privilege of examination.

Rebuilt and test run
Now

$195.00

F.O.B.
Quantity Discounts

KARL ORT

Department NR-3
YORK, PA.

FOR SALE

UNUSED Attachments 40% to 50% off

Amsco 2 CY dipper for Lorain 820
Amsco 1½ CY dipper for P&H 655
P-M ¾ CY dipper for Koehring 304
P-M ¾ CY dipper for Buckeye 70
B-E 15B fairleads.
BE 54B fairleads.
Lorain 820 fairleads & 70' boom.
Lima 34 Paymaster shovelfront.
Manitowac 3000 standard shovelfront.

SHOVELS, DRAGLINES, BULLDOZERS.
Late models in top condition.
Manitowac 3500 Hilift shovel. 1947.
Manitowac 3000 shovel, standard or hilift.
B-E 37-B standard shovel, D-13000.
Northwest 25 ¾ yd. dragline.
Lima Model 34 shovel, 350 hours.
Buckeye 70 ¾ yd. shovel, gas. Unused.
Buckeye 70 ¾ yd. dragline, gas. Unused.
Caterpillar D-8 #2U series, cabledozers.
Caterpillar D-8 #1H series, cabledozer. $7500.00.
Caterpillar DW-10 tractors with LaPlante Choate CW-10 scrapers.
4 A-C HD-10 bare tractors UNUSED. $4,800.00.
2 Buda 25KW Generators.
1 Caterpillar 75KW Generator, D-13000.

FRANK TESTA

925 Citizens Bldg. Cleveland, Ohio

FOR SALE

LINK BELT K-55 2 YARD CRAWLER CRANE, excellent condition, 1948 Buda diesel engine, 60' boom and fair lead, f.o.b. Miami, Florida, $15,000.00.

P&H 255-A TRUCK CRANE, 80' boom, mounted on 10 wheel truck, 18 ton capacity, excellent condition, $10,000.00 f.o.b. Miami, Florida.

KARL KOCH

362 Casanova Street, Bronx 59, N. Y.
DAyton 9-7474

Overhead Traveling Cranes
Structural Steel Buildings
Tanks - Conveyors

BENKART STEEL & SUPPLY COMPANY

2017 Preble Ave., Pittsburgh 12, Pa.

PIPE

FOR SALE
STIFF LEGGED CRANES

2—30 foot American Hoist and Derrick Co. Stiff Legged Cranes—40-ton capacity, 30 degree lateral swing, equipped with 1—100 HP motor, 1—80 HP motor 1—35 HP motor, with all controls, f.o.b. present location.

Can be examined at East Second Street and Hobart Avenue, Bayonne, N. J.

PHARMA CHEMICAL CORPORATION
BAYONNE, NEW JERSEY

WROUGHT Steel Pipe

FITTINGS
VALVES
BOILER
TUBES

ALBERT & DAVIDSON PIPE CORPORATION

2nd AVENUE 50th-51st STREET
BROOKLYN 32, N. Y.
Windsor 9-6300

VULCAN

PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

RAILS-TIES
TRACK ACCESSORIES

EVERYTHING FOR THE TRACK FROM
SWITCH TO BUMPER

SPECIAL OFFERING
We Offer
50,000 Good Used Creosoted Cross Ties
Immediate shipment

MORRISON RAILWAY SUPPLY CORP.

RAND BLDG. BUFFALO 3, N. Y.
EMPIRE BLDG. BIRMINGHAM 3, ALA.

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW-USED

GREENPOINT IRON & PIPE CO. INC
Bogart and Stagg Streets Brooklyn, N.Y.

PILING

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK

480 Lexington Ave. New York, N. Y.
Park Bldg. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

VALVES · PIPE · FITTINGS

PIPE SIZES
¼" to 24" standard weight, extra heavy hydraulic (limited stocks up to 60")

FABRICATING
BENDING
WELDING

STRUCTURAL PIPE FOR RAILINGS, FENCES, AWNINGS, COLUMNS

Foster maintains complete equipment for
• CUTTING • BENDING
• THREADING • WELDING

4 LARGE STOCKS WRITE OFFICE NEAREST YOU

L. B. FOSTER CO.
NEW YORK 7 PITTSBURGH 30 CHICAGO 4 HOUSTON 2

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used Rented & Sold

93 pcs. 60 ft. Inland I-27-Illinois.
178 pcs. 30 to 22 ft. Beth. DP2-Mass.
1050 pcs. 30 to 25 ft. Carn. M112-Minn.
24 pcs. 22 to 20 ft. Carn. M116-S.C.
112 pcs. 20 ft. Carn. M116-Pittsburg.
180 pcs. 15 ft. Beth. AP3-Buffalo.

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt
Regardless of location of your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.

509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on following pages

Polk, Powell and Hendon

Engineers—Consultants

Harry H. Hendon—
Hugh A. Powell

Water Systems, Sewers and Sewage Treatment Plants, Steam and Hydro Plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates and construction supervision.

620 Chamber of Commerce Bldg.,
Birmingham 3, Ala.

Palmer and Baker, Inc.

Consulting Engineers

For Problems of Transportation
Subaqueous Vehicular Tunnels
Rock Tunnels
Utility Tunnels
Bridges
Grade Separations
Highways
Airports
Traffic Studies
Parking Problems
Waterfront & Harbor Structures

Mobile, Alabama

Heron Engineering Co.

Chemical, Mining, Industrial and Hydraulic Plants, Irrigation, Water Supply, Power and Sewerage Systems, Large Rockfill Dams, Airports, Oil, Gas and Water Pipe Lines
2000 So. Acoma, Denver 10, Colorado
Chama, New Mexico

Industrial Drilling and Boring Corp.

FOUNDATION BORINGS
GEOLOGICAL SURVEYS

P. O. Box 1206 — 1746 E. Adams St.
Jacksonville, Florida

Patchen & Zimmerman

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment, Supervision, Surveys, Reports.
Daniel Field Airport,
Augusta, Ga.

E. J. Albrecht Company

Engineers—Contractors

Steel, chemical and power plants, Dams, flood control projects, railroads, Bridges, tunnels, heavy excavation.

2626 West 26th Street, Chicago 8

Alvord, Burdick & Howson

Charles B. Burdick
Louis B. Howson — Donald H. Maxwell

Consulting Engineers

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

Room 1401
20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports
351 East Ohio St., Chicago 11, Illinois

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Harza Engineering Co.

Consulting Engineers

L. F. Harza
E. Montford Fucik — Calvin V. Davis
Hydro-Electric Power Projects
Transmission Lines, System Management, Dams, Foundations, Harbor Structures, Soil Mechanics
400 W. Madison St., Chicago 6, Ill.

Hazelet & Erdal

Consulting Engineers

Fixed and Movable Bridges	Designs Supervision
Superhighways	Investigations
Industrial Bldgs.	Reports
Airports	Dams Surveys

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Heyburn Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - Hydraulic - - Gas
Public Utilities - - Industrials
231 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities - Industrials
Studies—Reports—Design
Supervision
Chicago

Interstate Engineering

Consulting Engineers

Design and Supervision of Municipal Improvements
Water Works, Sewage, Drainage, Surveys
Foundation Borings
Rock Island, Illinois

Jenkins, Merchant & Nankivil

Consulting Engineers

Water Systems, Power Development
Flood Control, Airports, Traffic Surveys, Municipal Improvements, Sewerage, Industrial Plants, Recreational Facilities, Investigations and Reports.
805 East Miller St., Springfield, Ill.

Boyd E. Phelps, Inc.

Engineers

Water Supply and Purification
Sewage and Industrial Waste Treatment
Power Generation, Airfields, Reports, Investigations, Appraisals.
622½ Franklin St., Michigan City, Ind.

Chas. W. Cole & Son

Sewerage, SewageTreatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings
Chas. W. Cole, Sr. Chas. W. Cole, Jr.
Ralph J. Bushee, M. J. McKlain
Wilbur H. Gartner
220 W. LaSalle, South Bend, Ind.

Stanley Engineering Company, *Consulting Engineers*

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate Studies - Sewerage - Valuations - Water Works
Hershey Building, Muscatine, Ia.

G. Douglas Andrews Associates

Engineering Consultants

General Engineering
and Consulting Services
Valuations and Management
212 Washington Avenue
Towson, Baltimore 4
Maryland

Saxe, Williar & Robertson

ENGINEERS • CONSULTANTS

Industrial Buildings
Bridges - Structures - Foundations
Highway & Regional Planning
Harbor Works • Port Development
Reports • Investigations

130 West Hamilton St.,
Baltimore 1, Maryland

Whitman, Requardt and Associates

Engineers — Consultants

Civil — Sanitary — Structural
Mechanical — Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul Street
Baltimore 2, Maryland

Maddox & Hopkins Inc.

Civil Engineering Consultants

Sewer & Water Design—Highway Design—Land Planning—Topographic Maps—City, Plane, Geodetic & Aerial Surveys — Plans — Specifications — Reports

8511 Colesville Rd., Silver Spring, Md.
Phone Washington, D. C., SL igo 4600

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical, Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations	Reports Design
Supervision of Construction and Operation	
Management	Valuation Laboratory
Statler Building	111 Sutter St.
Boston 16	San Francisco 4

Philip B. Streander and Affiliates

Consulting Sanitary Engineers

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Plans, Supervision, Reports
126 Tremont Street, Boston 8, Mass.

Chas. F. Dingman

Engineer

Consultant on Construction Cost
Valuation of Physical Assets
Estimates of Cost of Projected Construction or Expansion
Established 1925
Palmer, Mass.

Burns & McDonnell Engineering Company

Consulting Engineers — *50th Year*

Water Works, Light and Power, Sewerage, Reports, Designs, Appraisals
Rate Investigations,
Box 7088 Country Club P. O.
95th & Troost, Kansas City, 2, Mo.

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry

Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman, F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures.
1404 Baltimore Kansas City 6, Mo.

Russell & Axon

Consulting Engineers

Geo. S. Russell — F. E. Wenger
Joe Williamson, Jr.
Water Works, Sewerage, Sewage Disposal, Industrial and Power Plants, Appraisals.
408 Olive Street — Municipal Airport
St. Louis 2, Mo. — Daytona Beach, Fla.

Sverdrup & Parcel

Consulting Engineers

Bridges, Structures and Reports, Industrial and Power Plant Engineering.
Syndicate Trust Bldg., St. Louis 1 Mo.

Benjamin L. Smith & Associates

Engineers

Investigations—Reports
Designs—Supervision—Valuations
Municipal Engineering and Public Utilities
11 North Pearl St. Albany 7, N. Y.

F. D. Cooper

Consulting Engineer

Foundations
Design
Investigation
321 Lansdowne Road
DeWitt, New York

E. Lee Heidenreich, Jr.

Consulting Engineer

Quarries	Plant Layout
Crushing Plants	Storage
Milling Plants	Methods
Concrete Products Plants	Design Appraisals

67 Second St. Newburgh, New York

Andrews & Clark

CONSULTING ENGINEERS

DESIGN—CONSTRUCTION
SUPERVISION—REPORTS

305 East 63rd Street
New York 21, N. Y.

Barker & Wheeler

Water Supply	Utility and
Sewerage	Industrial
Sewage Disposal	Valuations
Power Systems	Reports

New York City, 11 Park Place
Albany, N. Y. 26 State St.

Clinton L. Bogert Associates

Consulting Engineers

Water and Sewage Works
Refuse Disposal — Industrial Wastes
Drainage — Flood Control
624 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates

Engineers

Sewerage—Sewage Treatment
Water Supply—Purification
Refuse Disposal—Analyses
Valuations—Reports—Designs
110 William St., 2062 Kings Hgway.
New York 7, N. Y. Fairfield, Conn.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest most direct method of contacting consultants who may be available NOW.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding and following pages

Buck, Seifert & Jost

Consulting Engineers

(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations. Chemical and Biological Laboratories.

New York City, 113 E. 19th St.

Christiani & Nielsen

ENGINEERS

Harbor works - Bridges - Foundations - Industrial Buildings - Power Plants - Dams - Tunnels - Highways - Railroads

350 Fifth Ave., New York 1, N. Y. Buenos Aires Rio de Janeiro Lima Montevido Caracas Mexico Bogota

Paris London The Hague Stockholm Oslo Copenhagen Cape Town Bangkok

L. Coff

Consulting Engineer

Prestressed Concrete Bridges and Frames

198 Broadway New York 7, N. Y.

Hugh L. Cooper & Co.

Incorporated

General Hydraulic Engineering

Including the design, financing, construction and management of hydro-electric power plants.

250 Fifth Ave., New York 1, N.Y.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street New York
209 S. LaSalle Street Chic. 4, Ill.
1604 K Street, N.W. Wash. D. C.

Fay, Spofford & Thorndike

Engineers

Charles M. Spofford Ralph W. Horne
John Ayer William L. Hyland
Bion A. Bowman Frank L. Lincoln
Carroll A. Farwell Howard J. Williams

Bridges and Industrial Plants
Water Supply and Sewerage Works
Port and Terminal Works Airports

Valuations, Investigations, Designs, Supervision of Construction.

11 Beacon St., Boston, Mass.
420 Lexington Ave., N. Y.
(Graybar Bldg.)

Fraser-Brace Engineering Co., Inc.

DESIGN - CONSTRUCTION - REPORTS - APPRAISALS COMPLETE MANAGEMENT OF PROJECTS

10 East 40th St.,
New York 16, N. Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers

Bridges and Structures

New York, N. Y., 55 Liberty St.
Kansas City, Mo., 921 Walnut St.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

Harbors, Piers & Bulkheads, Drydocks, Foundations, Soil Mechanics, Sanitary & Industrial Waste Disposal, Water Supply, Flood Control, Airports, Highways, Bridges, Power, Industrial Plants.

27 William Street New York
Fidelity Phila. Trust Bldg. Philadelphia
Ferry Bldg. San Francisco

Lockwood, Kessler & Bartlett, Inc.

ENGINEERS — SURVEYORS

General Engineering Services
Aerial and Ground Surveys
Photogrammetric Mapping
Domestic and Foreign

32 Court St. Brooklyn 2, N. Y.

Knappen Tippetts Abbett Engineering Co.

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.

535 Fifth Ave. State Street Bldg.
New York, N. Y. Harrisburg, Penna.

Moran, Proctor, Freeman & Mueser

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N.Y., 420 Lexington Ave.

PARIDO, PROCTOR, FREEMAN & MUESER
Ap. Corrfos 614 Caracas, Venezuela.

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie Ernest W. Whitlock
Richard Hazen G. G. Werner, Jr.

Investigations, Reports, Plans, Supervision of Construction and Operations. Appraisals and Rates

25 W. 43rd St., New York 18, N. Y.

The Pitometer Company

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Penstock Gaugings

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts

Weston Garett-Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals
30 Church Street, New York 7

Sanderson & Porter

Engineers and Constructors

New York Chicago
San Francisco Los Angeles

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye, Stevenson & Value

Consulting Engineers

Successors to
Elwyn E. Seelye & Company
101 Park Avenue
New York 17, N. Y.

Airports, Highways, Dams, Concrete, Steel Welding, Foundations, Stadia, Appraisals & Industrial Plants.

Elwyn E. Seelye, Albert L. Stevenson
Burnside R. Value
L. C. Hammond, H. S. Woodward, Austin M. Rice, C. H. Hamilton, V. J. Pacello, C. M. Throop, R. Sahlberg, W. D. Bailey, J. U. Wiesendanger, F. King.

Ole Singstad

Consulting Engineer

TUNNELS

Investigations, Reports, Design Specifications, Supervision

15 Whitehall St., New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7
1400 South Penn Square, Philadelphia

Havana, Cuba Lima, Peru
Bogota, Colombia, Caracas, Venezuela, San Juan, Puerto Rico, Guayaquil, Ecuador

Sy-Co Engineers

G. A. Syversen, G. Randolph Syversen
H. Syversen—Consultants
Industrial Plants, Commercial Buildings, Power Plants.
Materials Handling Systems
Estimates—Reports—Design
Supervision
32 Broadway New York 6, N. Y.

D. B. Steinman

Consulting Engineer

Bridges
Design, Construction, Strengthening, Investigations, Reports, Advisory Service.

117 Liberty St., New York 6, N.Y.

Taylor, Henry W.

Water Supply, Sewerage
Garbage Disposal, Incineration
Industrial Wastes Disposal
Hydraulic Developments

11 Park Place, New York City

The J. G. White Engineering Corporation

Design—Construction
Reports—Appraisals

80 Broad Street, New York 4

James M. Caird

Established 1898

C. E. Clifton, H. A. Bennett
Chemists and Bacteriologist
WATER ANALYSIS
Tests of Filter Plants
Cannon Building, Troy, N. Y.

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings

Troy, N. Y. Ft. Lauderdale, Fla.

The F. A. Schneider Co.

Consulting Engineers

Commercial Buildings, Process Plants, Layouts & Design.

Box 310, Bucyrus, Ohio

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Reports and Plant Location Surveys

New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

W. L. Havens C. A. Emerson
A. A. Burger F. C. Tolles F. W. Jones
CONSULTING ENGINEERS
Water, Sewage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

Burgess & Niple

Civil and Sanitary Engineers

Consultants since 1908

Water supply treatment and distribution. Sewage and industrial wastes disposal. Investigations, reports, appraisals, rates. Plant operation, laboratory, plans and specifications.

584 E. Broad St. Columbus 15, Ohio

Consult these Specialists:

Let them save your time by bringing their broad experience to their specialty to bear on your problems.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding pages

Jones, Henry & Schoonmaker
(formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

Toledo Testing Laboratory
Engineers—Chemists
Inspection Tests
Research Development
Concrete — Asphalt — Soils — Ceramics
Foundation Investigation
Borings Diamond Drilling
Load Tests
1810 North 12th St. Toledo 2, Ohio

Glancy, Carle & Marseglia
Engineers
Steel & Concrete Structures
Industrial, Commercial Buildings
Design, Supervision, Reports
1506 Market Street, Youngstown, Ohio

Benham Engineering Co.
ENGINEERS
Webster L. Benham
M. Am. Soc. C. E.
Water Supply & Purification, Sewerage, Sewage Disposal, Electric Light & Power, Roads, Drainage
Am. National Bldg., Oklahoma City, Okla.

Capitol Engineering Corporation
Engineers—Constructors—Management
Bridges Dams
Planning Airports
Sewage Systems Water Works
Design and Surveys Roads & Streets
Executive Offices Dillsburg, Penna.

Economy
The service of the Consultant can usually be an economy in coping with your most intricate problems.

Brookhart & Tyo, Inc.
Engineers
Highways
Industrial Buildings
Bridges and Structures
Design, Estimates, Reports
6th & Maclay Sts. Harrisburg, Pa.

Gannett Fleming Corddry & Carpenter, Inc.
ENGINEERS
Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control. Town Planning, Appraisals, Investigations & Reports.
Scranton Pa. Pittsburgh, Pa.
Harrisburg, Pa.

Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Day & Zimmermann, Inc.
Engineers
Designs, Construction, Valuations
Reports and Management
Public Utilities and Industrials
Philadelphia
New York Packard Building Chicago

Fridy - Gauker - Truscott & Fridy
Architects & Engineers
Water Sewerage Industrial Waste
Incineration Power & Distribution
Airport Building Town Planning
1321 Arch Street, Philadelphia 7, Pa.

William A. Goff, Inc.
General Engineering and Consulting Services
Water, Sewerage, Refuse Incineration, Industrial Buildings, Power Plants, Airports, Town Planning, Plans, Supervision, Valuations, Reports.
Broad St. Station Bldg., Phila. 3, Pa.

Hunting, Larsen & Dunnells
Engineers
Industrial Plants—Structures
Bridges—Steel and Reinforced Concrete
Design and Supervision—Reports
1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles, Inc.
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
Pittsburgh, Pa.

Gilbert Associates, Inc.
Engineers and Consultants
Design and Supervision of
Steam, Hydro, Water Supply,
Sewage Disposal, Diesel Plants
and Airports, Valuations, Laboratory
Reading, Pa. 412 Washington St.
New York 61 Broadway
Houston Oil & Gas Building
Washington, D. C. 1417 K St., N. W.

Michael Baker, Jr., Inc.
THE BAKER ENGINEERS
CIVIL ENGINEERS, PLANNERS, AND SURVEYORS
MUNICIPAL ENGINEERS
Airport Design—Sewage Disposal Systems—Water Works Design and Operation—Cons. Sur.—Surveys & Maps.
Rochester, Pa. Jackson, Miss.

Lacy, Atherton, Wilson & Davis
Architects and Engineers
Hotel Sterling Building,
Wilkes-Barre, Pa.

Frank A. Busse
Consulting Engineer
Industrial Buildings, Viaducts, Bridges, Foundations, Harbor Works, River Barge Terminals, City Planning, Airports, Sewage Treatment.
869 Shrine Building, Memphis 3, Tenn.

Myers & Noyes & Associates
Consulting Engineers
Water Supply, Sewage, Flood Control, Shore Protection, Irrigation and Reclamation, Reports and Valuations
2204 Tower Petroleum Bldg., Dallas, Texas
320 Wilson Building
Corpus Christi, Texas

Lockwood & Andrews
Consulting Engineers
Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply Structures, Harbor Works, Valuations, Reports — Design — Supervision
Union Nat'l Bank Bldg., Houston, Tex.

Hutchings & Milani
Architects, Engineers & Constructors
Louis C. Milani
Nicholas J. Sensesy, A.I.A.
Clark W. Abbott, B.E.B.A.
Patricia Stewart Collier, B.A.
Design-Consultants-Constructors
Specializing in Industrial, Hotel & Resort Developments throughout the West Indies.
HAMILTON, BERMUDA.

Inspecting and Testing

Robert W. Hunt Co.
Inspecting and Testing Engineers
Inspection and Tests
of Materials
Supervision of Construction
for
Utility Plants,
Buildings, Bridges,
Machinery and Equipment
General Offices and Laboratories
175 West Jackson Boulevard, Chicago
New York — Pittsburgh — St. Louis

The Gulick-Henderson Laboratories, Inc.
Inspecting & Testing Engineers
524 Fourth Ave., Pittsburgh 19, Pa.
25 West 43rd St., New York 18, N. Y.
431 South Dearborn St., Chicago 5, Ill.

SEARCHLIGHT SECTION

(Classified Advertising)

Air Compressor Rental Co. 106
Albert & Davidson Pipe Corp. 104

Bauer, L. W. 112
Bendix Machinery Co. 108
Benkart Steel & Supply Co. 114
Berger & Sons, Inc., C. L. 112
Berkeley Distributors 110
Bernstein Bros. 110
Bixby Inc., R. W. 105
Boyer, Robert H. 109
Brunson Instrument Co., Inc. 112
Buff 112

Carlyle Rubber Co., Inc. 108
Clapp, Riley & Hall Co. 110
Concrete Carriers, Inc. 110
Contractors Machinery Co. 109

Detroit Civil Service Commission 105

Ecorse, City of 105
Ehrbar 113
Ellis-Novack Co. 111
Ennis Supply Co. 106, 109
Elkin 111
Equipment Corp. of America 109

Forsythe Equipment Co., Inc. 106
Foster Co., L. B. 114
Frank, M. K. 114
Furnival Machinery Co. 106, 108, 110, 111, 113

Greensburg Machine Co. 113
Greenspoint Iron & Pipe Co., Inc. 114
Gurley W. & L. E. 112

Hercules Elect. Machy. & Equip. Co. 113
Hickerson, Roy D. 112
Hodge & Hammond Inc. 108, 109, 110, 111, 113
Hogan, M. S. 112
Hoisting Machinery Co. 108
Hyman-Michaels Co. 110

Industrial Plants Corp. 112

Johnston Louisville Builders Supply Co. 105

Kane & Associates, Valentine B. 106
Koch Erecting Co., Karl 110, 111, 114

Lewis, Harry C. 111

McGurk Inc., E. B. 110
McIlyar Const. Co., W. K. 106
Mill & Quarry Equipment Co. 106
Mississippi Valley Equip. Co. 113, 114
Morrison Railway Supply Corp. 114

National Blue Print Co. 112

Olympic Commissary Co. 106
O'Neill Co., A. J. 109
Ort, Karl 114

Peterson, A. H. 106
Pharma Chemical Corp. 114

Rockville Centre, Village of 106

Schoonmaker Co., Inc., A. G. 111
Shannon & Co., J. Jacob 110, 112
Smith, Inc., L. B. 107
Stanhope, Inc., R. C. 109
Stone the Crane Man 112

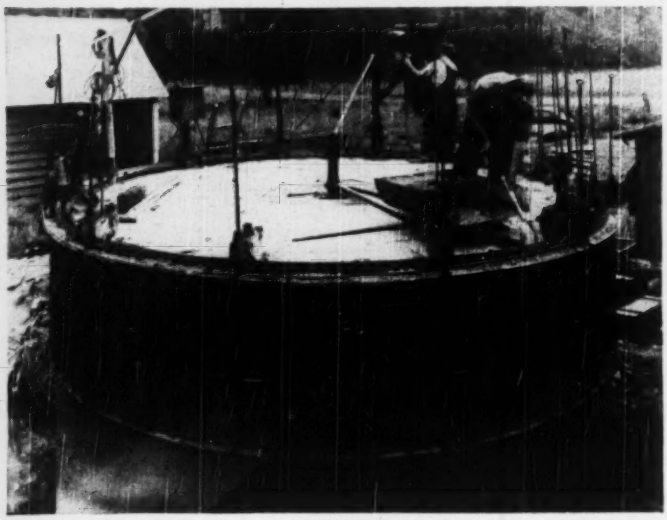
Tamblyn System 105
Testa Bros., Inc. 114
Tractor & Equipment Co. 113
Tuckahoe Construction Co., Inc. 111

Urbana & Champaign Sanitary Dist. 105

Van Houten Machinery Co. 108
Vulcan Iron Works 114

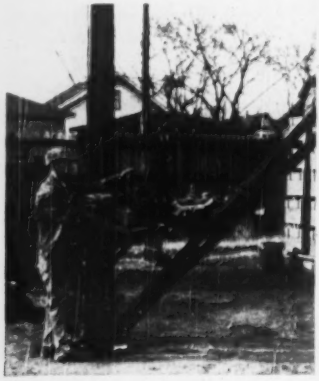
Walsh Co., Richard P. 108
Warren-Knight Co. 112
Weil & Co., J. H. 112
Weiss Co., B. M. 111
White Co., David 112
Wikstrom, Inc., A. S. 112
Williams, A. V. 113
Williams Construction Co. 110
Wilson Engineering Corp. 105

NEW PRODUCTS



Hydraulic Slip Forms Speed Construction of Concrete Silos and Bins

Self-raising sliding steel form permits erection of concrete silos and storage bins at rates of one foot of height per hour. The complete Concretor equipment includes: Working platform supported by inner steel ring; concrete tray which swings on center pin to dump concrete at all points on the periphery; three electro-hydraulic jacks activated from a control box; and concrete mixer, buggy, and bucket. All the equipment can be carried on a standard 2½-ton truck. The Concretor is available in standard sizes of 13½, 16½, 20½, and 26½-ft. inside diameters. Features claimed are: Low building cost; smooth surface cast in one piece; air and water-tight walls; and rapid construction.—B. M. Heede, Inc., 80 Broad St., New York 4, N. Y.



Portable Electric Winch

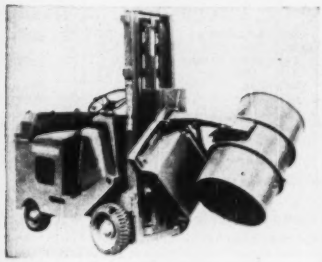
Compact drum-and-cable winch is available in six models and capacities with either single or three-phase dual-voltage motors. The Stampco Tugger is powered to furnish a line pull of 500 to 1,500 lb. at speeds ranging from 55 to 220 fpm. Double-reduction spur gears convert the output of a high-torque repulsion-induction motor to a constant speed and power ratio on the drum of the winch. Uses include: Operating draglines, truck winch for loading and unloading, power unit for materials elevators, and operating conveyors—St. Anthony Machine Products Co., 2424 E. Franklin Ave., Minneapolis 6, Minn.

Crosshead Guide for Pumps

Assembly for use on the Carter line of plunger sludge pumps results in increased pumping efficiency and cuts maintenance down time. Main advantages of this design modification are to eliminate misalignment of the plunger and any tendency toward eccentric motion of the plunger in the vertical path, and reduces possibility of excessive wear on the packing gland as well as wear on the plunger and cylinder.—Ralph B. Carter Co., 192A Atlantic St., Hackensack, N. J.

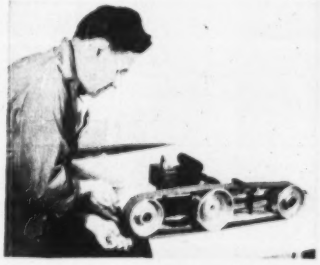
Couplers for Air Lines

The Ireco air coupler has these features: Guaranteed for a working pressure of 150 lb., pressure-tested to 450 lb.; flexible, positive, and quick-acting lock; flexible pressure-seal ring and gasket made of oil-resistant neoprene; no special tools need for assembly; fits either steel or aluminum tubing with 2-in. O. D., with adapters available for iron pipe thread; heavy steel band clamp with internal barbs.—Irrigation Equipment Co., Inc., 409 E. 8th Ave., Eugene, Oreg.



Revolving Barrel Grab

Hydraulically controlled grab is designed to lift and transport open-end drums and to discharge their contents. Revolving carriage permits the container to be completely revolved in either direction. The barrel grab has a lifting capacity of 2,100 lb., and will hold cylindrical objects from 15 to 30 in. in dia.—Towmotor Corp., 1226 E. 152 St., Cleveland 10, O.



Grinder Sets at Any Angle

Belt grinder is mounted on an axis centered at the motor shaft permitting the abrasive belt to be set at any angle. The Expeditor is designed for free-belt operation; form wheel work or contour grinding; line contact grinding; and other operations. Various densities are available.—Harvey L. Ramsay & Co., 636 S. 10th Ave., LaGrange, Ill.

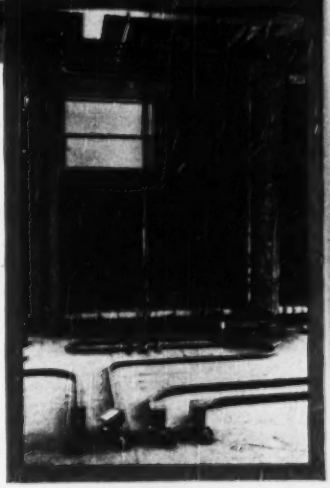
Centrifugal-Pump Seals

Mechanical seals for stuffing boxes of centrifugal pumps are primarily designed to increase service time and reduce leakage losses. The Type U is a balanced, high-pressure single seal for installation on shafts from 1¼ to 5¾ in.; with special sizes available for shafts of larger diameter. The

(Continued on page 120)

MEDICAL AND SURGICAL BUILDING—NORRISTOWN, PA. STATE HOSPITAL
Department of Welfare, Commonwealth of Pennsylvania
HOWELL LEWIS SHAY, AIA—Architects
STEWART A. JELLETT CO.—Engineers
HERMAN GOLDNER CO.—Heating and Ventilating Contractor
LANDAU PLUMBING & HEATING CO.—Plumbing Contractor

To assure pipe health . . . RADIANT HEATING and 5 OTHER SERVICES here are BYERS WROUGHT IRON



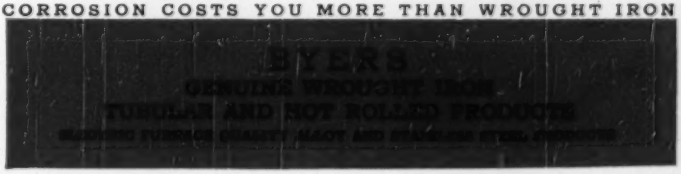
In this new hospital, the designers not only gave careful thought to the welfare of the patients—but also to the welfare of the piping on which so many services and facilities depend. Byers Wrought Iron pipe was installed in the modern radiant heating system, which utilizes both floor and ceiling coils to warm all four floors, and in steam return lines, rain water conductors, rain water drainage above basement, refrigeration water, and refrigeration drainage lines. The small illustration shows radiant heating coils with balancing valves and also some plumbing risers in a bathroom in the nurses' quarters.

With so many new hospitals now being constructed throughout the country, it is vital to assure that these aids to community health do not bring financial headaches through excessive upkeep charges. In corrosive piping services, where premature failures would entail a continuing burden of maintenance, engineering experience recommends wrought iron for protection. The tiny fibers of glass-like silicate slag that are threaded through the high-purity iron body of the material halt and disperse corrosive attack, and so discourage pitting and penetration. The fibers also anchor the initial protective film, which shields the underlying metal.

A knowledge of the nature, characteristics and methods of manufacture of wrought iron is an excellent guide to its proper application. Our booklet, THE A B C's OF WROUGHT IRON, gives the complete story. Ask for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

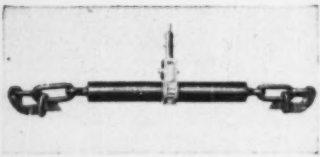
CORROSION COSTS YOU MORE THAN WROUGHT IRON



type L is a simple, inexpensive, and low pressure single seal for small pumps handling cold water, where temperatures do not exceed 110-deg. F. and pressures do not exceed 50 psi. The Type B is an oil-lubricated double seal for high pressure and cold service where pumped liquids contain little, if any, lubricating value. Included with the Type B is a two-compartment oil-tank assembly.—Byron Jackson Co., Pump Division, Terminal Annex Box 2017, Los Angeles 54, Calif.

Expanded Truck Line

Expanded line of Dodge trucks comprises 356 basic gross-vehicle-weight models. Among the features announced on the new B-2 series are: Electric system which assists in improved engine performance, new 5-speed synchro-shift transmission, new 5-speed synchro-shift overdrive transmission, and others. A new engine is among seven offered in the line. The line of Dodge trucks previously consisted of 248 models.—Dodge Division, Chrysler Corp., Detroit 31, Mich.



Twenty-Ton Pulling Jack

Ratchet pulling jack (20-ton capacity) has a 2-in. screw and is available in barrel lengths of 24, 30, or 36 in. It is equipped with lock-link hook-ends and other features of the Simplex line including spring-operated plunger which firmly engages the pawl or dog with the ratchet wheel. Complete details can be obtained from —Templeton, Kenly & Co., 1002 S. Central Ave., Chicago 44, Ill.

Self-Locking Set Screw

Zip-Grip self-locking set and adjusting screw is specifically designed for applications in which excessive vibration is a factor, and for regulating and adjustment applications in which instantaneous locking at a precise point is desired. The Zip-Grip does not require lock nuts, wires, impinging locking screws, or deformed or riveted threads. Available in all metals including soft or hard steel, case-hardened or heat-treated stainless steel, brass, bronze, or aluminum. They may be had with any type head.—Set Screw & Mfg. Co., Bartlett, Ill.

Window Sash Holding Device

Sash Snubr device permits raising and lowering a window or holding it at any given point with a single unit which has no outside attachment. It consists of a stainless steel holder and pressure spring which exerts pressure upon a synthetic rubber roller. When movement of the window stops, the spring applies a tiny brake shoe to the roller, which holds the window in place. The Snubr may be installed in either the sash or the window frame. —Verb Mfg. Co., Inc., Box 550, Coffeyville, Kans.

Bantam-Weight Cranes

The Jones line of bantam-weight cranes, manufactured by K & L Steelfounders & Engineers, Ltd., of England, are now available in the United States. Features include precision workmanship, low initial cost, and low cost of operation. Cranes will be shipped from England without motor, boom, counterweight, and many other component parts, all of which will be installed in the United States.—Tractor & Equipment Co., 3515 W. 51st St., Chicago 32, Ill.

Blind Rivets in Two Types

Faster assembly and lower cost are among the advantages of the Huck PT (pull-through) and 9SP (self-plugging) blind rivets. Features include: PT rivets have no minimum grip limitations; 9SP rivets have a grip range of 0.140 in. for any grip increment; positive shank expansion provides ample hole-filling for normal requirements; special engineering features prevent splitting of sleeve during formation of the blind head; pin tail is provided with pull grooves to assure positive driving; and pin tail is automatically ejected by the next rivet and cannot become jammed in the driving gun. These rivets are driven by one operator with a manual or pneumatic pull gun, and require access to only one side of the work. Both types are available in $\frac{1}{4}$, $\frac{5}{32}$, $\frac{3}{16}$, and $\frac{1}{4}$-in. dia.: in aluminum alloys or cadmium-plated mild mild steel with brazier or 100-deg. countersunk heads.—Huck Mfg. Co., 2480 Bellevue Ave., Detroit 7, Mich.

Electric Belt Sander

Wood, metal, and stone are sanded by tool using a 4¼-in. wide x 26-in. long endless belt. New Silver Line tool features direct spur-gear drive, rapid belt-change device, and heat-radiating system said to increase belt life. Simplified tracking arrangement permits easy centering of belt on roller pulleys. Thor Silver Line Belt Sander is available in two models; with or without dust collecting system consisting of a suction fan and collection bag.—Independent Pneumatic Tool Co., 175 N. State St., Aurora, Ill.

Hopper Truck Holds 35 Yd.

Hopper-type truck body handles 35 cu. yd. or approximately 26 tons of material. Inside dimensions are 26 ft. long x 90 in. wide. The air-operated hopper doors are 8 ft. long and 3 ft. wide, and are unlatched and closed by controls in the truck cab.—Marion Metal Products Co., Marion, O.

Grinding Wheels in Two Types

Synthetic resin-bonded grinding wheels are manufactured from laminated sheets of cotton fiber filled with abrasive grain. They are offered in two styles: 7 and 9-inch depressed center-type for use on portable disk sanders and right-angle-type portable grinders; and in straight wheels in 6, 8, 10, and 12 inch x ½-in.-thick size

(Continued on page 122)

Roughneck in Rock

BAKER Bulldozer and AC HD-19

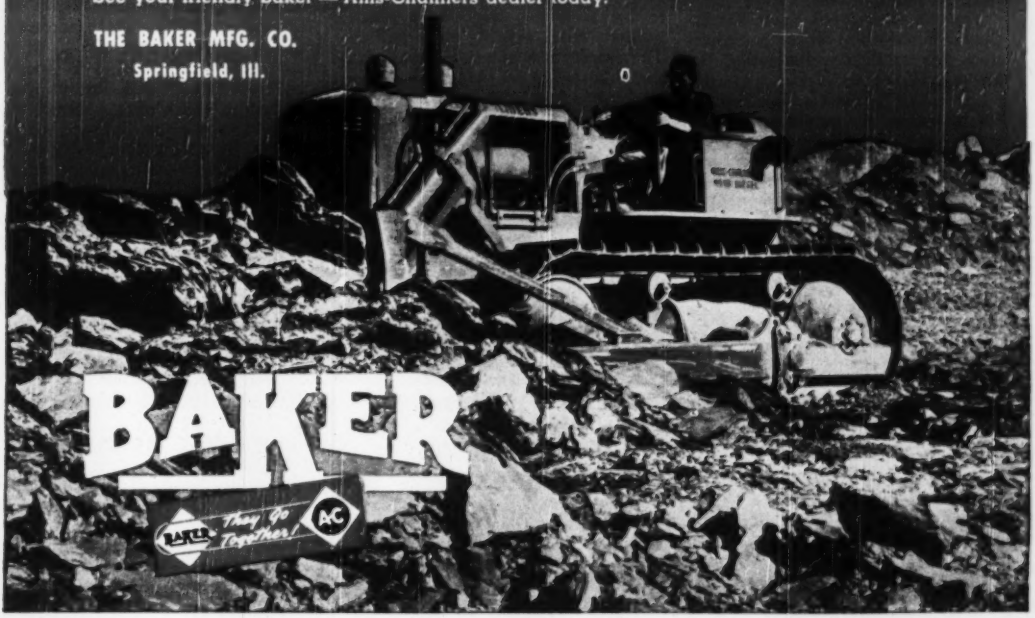
Have you noticed how often Baker Bulldozers on big A-C HD-19 tractors are found in the key spots where the going is rough and tough and big yardages must be moved fast at lowest cost?

It's a fact and not mere chance! For it didn't take long for bulldozer users to find out that this big Baker — A-C combination with hydraulic torque converter drive had what it takes to outdoze anything in the field . . . for more yardage per pass . . . for easier operation . . . for rugged reliability.

These are facts that can also be proved in the field on your job. If you are still using your regular bulldozers, it will pay you to investigate this great new Baker.

See your friendly Baker — Allis-Chalmers dealer today.

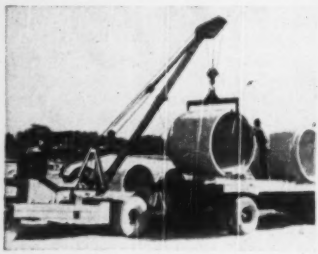
THE BAKER MFG. CO.
Springfield, Ill.



for cut-off and general- purpose use. Slightly flexible, the Fibrex Red Wheel allows a certain amount of side pressure without risk of wheel breakage, and cuts fast and clean without tearing out or fraying at the edge. The wheels are recommended for cut-off and general-purpose use on asbestos, wire screening, Celotex, Masonite, and other building materials.—Simonds Abrasive Co., Tacony & Fraley Sts., Philadelphia 37, Pa.

Paint Remover

Features of Strip-Master paint-removing compound include: easily rinsed with water—requires no other neutralization; will not burn or support combustion; will not irritate normal skin; and leaves a smooth surface as it does not etch fine metals or raise the grain of wood. Coverage varies with finishes—averages about 1 gal. per 200 sq. ft.—Holland American Co., 8124 S. Hoyne Ave., Chicago 20, Ill.

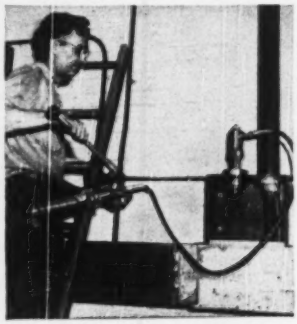


Mobile Swing-Boom Crane

Features of impoved Krane Kar include: Front-wheel drive, rear-wheel steer, self-stabilizing eliminating the use of jacks or stabilizers, automatic power cut-off at extreme positions of boom swinging and topping, automatic braking of load and boom lines, no tail swing, and one-man operation. Unit is available in four sizes with capacities of 1½, 2½, 5, and 10 tons. Can be equipped with gasoline or diesel engines; pneumatic or solid rubber tires; and booms from 9 to 37 ft. in length.—Silent Hoist & Crane Co., Inc., 841 Sixty-Third St., Brooklyn 20, N.Y.

Packaged Welding Outfit

Flamecraft oxyacetylene welding and cutting outfit is available as a packaged unit including 122-ft. oxygen and 60-ft. acetylene cylinders, welding torch, cutting attachment, tips, regulators, hose, goggles, cylinder truck, fluxes, an assortment of welding and hardfacing rods, and an instruction folder on the proper handling and operation of the equipment. Cylinders are provided on a 25-yr.-lease basis, eliminating demurrage charges and guaranteeing maintenance for the estimated life of the cylinders.—Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

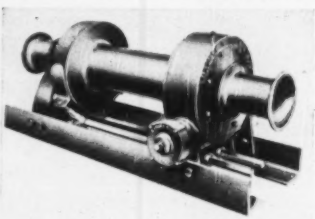


Hydraulic Knock-Out Punch

Knock-out equipment consists of a hollow-type hydraulic ram of 10-ton capacity and a remotely-controlled Porto-Power hydraulic unit. Features include: Operates in cramped spots because there is no wrench to swing, punches truer, more uniform holes, and prevents sudden break-throughs. Punch equipment is available in four kits with a range of openings from ½ to 4-in. dia.—Blackhawk Mfg. Co., Dept. P-36119, Milwaukee 1, Wis.

Picket Pin

Corkscrew turns of spiral picket pin are spaced for maximum earth retention. Uses include anchor for guy wires, tension support for vertical objects, and tiedown for tarpaulins and canvas equipment covers. Outstanding feature is double ring swivel which prevents chain twisting and snarling. The swivel hook moves freely around the picket while the swivel cup moves in all directions. Made of ⅜-in. galvanized steel, it is 18 in. long.—Bridgeport Chain & Mfg. Co., 964 Crescent Ave., Bridgeport, Conn.

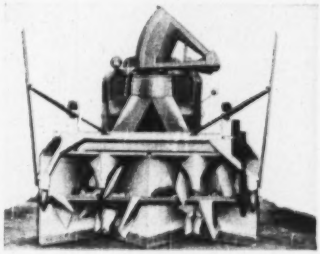


Heavy-Duty Truck Winch

Gear-case design of J Series of truck winches makes it impossible for winch line to become wedged between the case and drum. Gear case is built flush with the drum, and all reinforcing is on the inside of the gear case rather than on the outside. Increased air space in the case enables more efficient heat dissipation. Ratio of worm and gear is 40:1, resulting in more even pull at a more desirable line speed. Angular contact ball thrust bearings are used on the one-piece worm and shaft. The J Series will include models with safe working load ratings of 6,000, 10,000, 15,000, 20,000, and 30,000 lb.—Ramsey Winch Mfg. Co., Box 3035, Tulsa 8, Okla.

Square-Mesh Wire Cloth

All-welded square-mesh wire cloths are available in eight styles: 1x1-in. in 16, 17, and 18 gage; ¾x¾, in 18, 19, and 20 gage; and ½x½ in 20 and 21 gage. All are available in 24, 30, and 36 in. widths, in 100-ft.-long rolls. Welded construction at the joints eliminates crimping and interlocking, and permits all cross wires to lay on the same side. The wire cloths are galvanized after fabricating to exclude the possibility of rust, wear, or dirt accumulation. They are also available in plain steel finish.—Wickwire Bros., Inc., Cortland, N. Y.



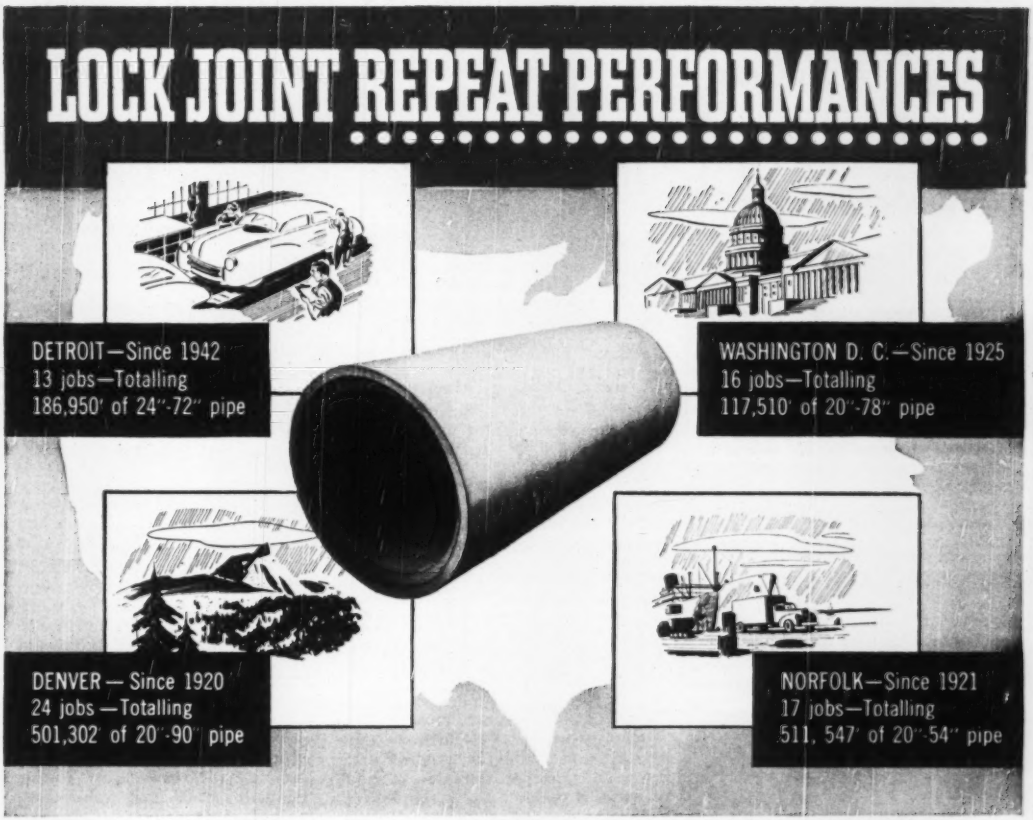
Chute for Snow Plows

Loading and casting chute increases flexibility of rotary snow plows. The chute is revolving with a 270-deg. swing from side to side, permits forward casting, and when telescoped, it serves as a snow caster, throwing snow in any position with the 270-deg. arc. Chute is hydraulically controlled within the cab. Available as standard or auxiliary equipment for Sno-Flyr rotaries.—Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave., S.E., Minneapolis, Minn.

Gas-Compression Engine

Gas engine is designed for use in conjunction with gas-transmission lines. Advantages of the Uniflo scavenging-principle gas-engine compressors include: Air inlet ports around the entire circumference at the bottom of the cylinder and dual, mechanically operated exhaust valves at the head produce clearance of burnt gases from the cylinder; complete charging with clean air; extremely low exhaust temperatures and assured load carrying ability.—Worthington Pump & Machinery Corp., Harrison, N. J.

LOCK JOINT REPEAT PERFORMANCES



Why do they all choose Lock Joint Pressure Pipe —again and again—for their major water supply projects?

THERE ARE FOUR MAIN REASONS

1. **Great structural strength at minimum cost.**
2. **Retains its high carrying capacity for generations.**
3. **Maintenance and repair costs, if any, are negligible.**
4. **An extremely long life of unfailing service.**

"Repeat performances" in key cities are positive proof that these conservative claims are true. We shall be glad to furnish specific references in these cities or in any other of more than 150 cities and towns in the western hemisphere which enjoy the unsurpassed services of Lock Joint water supply lines.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn.

SCOPE OF SERVICES

Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

★ ★ ★

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

"BERG"
CONCRETE SURFACER
MODEL A

"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

PRE-MOLDED
Para-Plastic
Seals
VERTICAL
JOINTS

Now you can seal vertical and overhead joints with Pre-molded Para-lateral Sealing Strips, quickly, easily and economically. Para-Plastic Sealing Strips can be installed on finished concrete, or they may be attached to the form and concrete poured up to it. Pre-molded Para-Plastic Strips have the same cohesive, adhesive and resilient qualities as our widely known Hot-Poured PARA-PLASTIC rubberized asphalt joint sealing compound.

SERVICISED QUALITY PRODUCTS 1939

Write for complete details of this TIME and COST - SAVING watertight seal for those "tough" applications.

SERVICISED PRODUCTS CORP.
6051 W. 65th ST., CHICAGO 38, ILL.

MANUFACTURERS' PUBLICATIONS

Twinbatch Paver—Relative production capacities of single-drum and two-compartment-drum pavers are discussed in detail in Catalog K-293. A complete description is included of the improved Model 34-E Koehring Twinbatch paver. More than 45 photographs and illustrations are used to graphically describe the high-capacity production features developed by this paver, which has a top output of 86.7 batches of concrete per hour on a 60-sec. mixing specification.—KOEHRING CO., 3026 W. CONCORDIA AVE., MILWAUKEE 10, WIS.

Conway Mucking Machine—Operational and construction features of the Conway mucking machine are listed in Catalog 49043.5. Machines listed are the new Type 100, the improved Type 75, and Types 50-B and 120 Series Conway shovels. Data in the catalog cover a general description of the Conway units, representative installations, and special equipment.—GOODMAN MFG. CO., HALSTED ST. AT 48TH, CHICAGO 9, ILL.

Ramset Fastening System—Equipment for power-driving studs and other fasteners into concrete, brick, steel, and other materials is described in new bulletin. The Ramset tools are available in two sizes—for light or heavy-duty work. This bulletin illustrates several types of fasteners including standard drive pins, coupled-head drive pins, snap-off-head drive pins, and internal and external threaded studs. Accompanying each illustration is a table listing the part number, overall length, thread description, thread length, overall length and diameter, and head diameter.—Stemco Corp., 1299 Parson Court, Cleveland 16, Ohio.

Spiral-Weld Pipe—Features of spiral-weld pipe include light weight, great strength, and tremendous economy in laid cost. Bulletin 493 (4 pp.) contains tabulated data on the complete line including pipes with diameters from 6 to 36 in. The data cover wall thickness, bursting pressure, test pressure, and theoretical weight per ft. Also listed, are light wall fittings and steel flanges for the Taylor spiral pipe.—Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.

All-Metal Clutches; Brake Linings—Four new catalogs cover the complete Velvetouch line of all-metal clutch plates, facings, and brake linings for Caterpillar, Allis-Chalmers, LeTourneau, and International Harvester tractors and earthmoving equipment. Each catalog covers all standard and replacement parts for an individual line of equipment, and is clearly indexed for easy reference.—The S. K. Wellman Co., 1374 E. 51st St., Cleveland 3, Ohio.

Wood for Heavy-Duty Construction—Advantages and physical characteristics of Greenheart (Nectanda Rodioei) lumber are set forth in new catalog. This wood is recommended for marine and heavy-duty construction. The catalog lists outstanding characteristics, compares Greenheart to several other standard construction lumbers, and describes several installations in which it has been used.—GREENHEART & WALLABA TIMBER CO., INC., 52 VANDERBILT AVE., NEW YORK 17, N. Y.

Bricklaying Machine—Method of using newly invented bricklaying machine is described photographically in new folder. The Brick-Lay-R is more properly defined as a jig or metal guide to assist in laying and plumbing brick, and to assist in holding bricks in place while mortar is applied around them. Catalog shows how the unit is constructed, as well as how it is used on the job.—HODGSON-SOMMERS, INC., MONTGOMERY, ALA.

Bronze Gate Valve—Design features of the Figure 27 and Figure 30 line of standard bronze gate valves are described in Circular 102. Large sectional drawings of a valve provide easy visual reference to the items listed in detail by text matter. Service ratings and a comprehensive table of sizes and dimensions are also included.—THE KENNEDY VALVE MFG. CO., 1066 E. WATER ST., ELMIRA, N. Y.

Steel-Hardening Compound—How to make metal-cutting tools from ordinary mild steel is described in a technical paper now ready for distribution. High-Speed-It is a carbon-chromium-manganese hardening compound, available in powder form. No special equipment is necessary for its use other than a source of heat which will bring the metal up to a cherry-red temperature. The paper contains complete information on its use, and on the results which can be achieved with it.—Wilson Carbon Co., Construction Division, 60 E. 42nd St., New York 16, N. Y.

Lightweight Hot-Rolled Beams—Technical data for the installation of Junior Beams and Junior channels are described in 24-p. booklet. Junior Beams

are the lightest hot-rolled steel beams manufactured and are said to provide skyscraper construction for every building. Booklet AD-156 is attractively presented and amply illustrated with photographs of Junior Beam floor joist and roof purlin installations in progress. Individual sections are devoted to construction of light occupancy buildings, industrial buildings, and residences.—JONES & LAUGHLIN STEEL CORP., 428 JONES & LAUGHLIN BLDG., PITTSBURGH 30, PA.

Nuts, Bolts, Guard Rails—Seventy-six-page stiff-bound catalog lists a complete line of metal accessories including nuts, bolts, guard-rail material, pole-line hardware, rods, washers, and special metal-treating processes. The Sealtite units are made in a wide variety of sizes and shapes, each of which is listed in the 1949 catalog. Tables present concise data on dimensions, weight, and list prices.—LEWIS BOLT & NUT CO., 504 MALCOLM AVE., S.E., MINNEAPOLIS 14, MINN.

Portable Lighting Equipment—Electric lines for power transmission and portable lighting are described in Catalog SL-202. The String-a-lite lines are sectionalized to simplify installation and provide maximum portability. The bulletin explains how these sections can be interconnected at proper intervals to form one continuous light or power string. Other features are also listed.—MINES EQUIPMENT DIVISION, JOY MFG. CO., DEPT. AA67, HENRY W. OLIVER BLDG., PITTSBURGH, PA.

Floatless Sump Pump—Automatic submersible floatless sump pump is described in new folder which lists eight important features of the pump. Operation of the Kenco floatless liquid-level switch, designed to actuate and control the pump, is completely described and illustrated. Other data cover capacities for various discharge head requirements, weights, dimensions, voltages, list prices, and basic construction details of the entire assembly.—KENCO, INC., ELYRIA, OHIO.

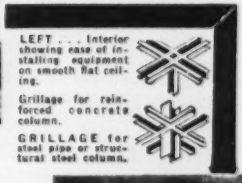
Floodlights and Reflectors—More than 100 Red Cap floodlights and reflectors are listed in 46-p. catalog. Information presented lists accessories, repair parts, and complete installation and operating data. A condensed version of Catalog FL-49 is also available. —S&M Lamp Co., 119 W. 36th Place, Los Angeles, Calif.

Lettering-Guide Style Chart—Templets for a wide variety of lettering styles are listed in 4-page bulletin. The Varigraph lettering aid is designed to

(Continued on next page)

Advantages of SMOOTH CEILINGS SYSTEM Proven in this NEW University Building!

MECHANICAL-AERONAUTICAL ENGINEERING BUILDING UNIVERSITY OF MINN.


LEFT . . . Interior showing ease of installing equipment on smooth flat ceiling.
Grillage for reinforced concrete column.
GRILLAGE for steel pipe or structural steel column.

SPECIAL STEEL GRILLAGES used in place of usual flared column caps, eliminate beams or drop panels. This permits easy installation of air ducts, piping, etc. Makes interior finishing simpler, reduces ceiling heights and provides greater flexibility in building design.

SAVINGS have been reported with this flat slab design. MAKE THE COMPARISON YOURSELF!

WRITE FOR NEW BULLETINS NOW!

● Staircase design showing flexibility possible with Smooth Ceilings System.

SMOOTH CEILINGS SYSTEM
Metropolitan Life Bldg., Dept. A Minneapolis, Minn.

Diamond Core
Drilling
CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES
Tinney Drilling Co.
Grafton, W. Va.

WELDING CONNECTORS
Saxe System Welded Connection Units for welded assembly
Saxe Units place in position and securely hold together structural parts to be welded.
As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.
Write for 58 pg. Manual containing full engineering design information for welded structures.
J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
G. D. PETERS CO. Montreal-2, Canada

GRIFFIN
GRIFFIN
WELLPOINT SYSTEMS
JETTING PUMPS
Distributors
GRIFFIN ENGINEERING CORP.
201 E. Adams St.,
JACKSONVILLE, FLA.
GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street,
HAMMOND, INDIANA
GRIFFIN WELLPOINT CORP.
881 EAST 141st ST. • NEW YORK 54 N. Y.
Phone: MElrose 5-7700 5-6

permit a wide variety of width and height of letters with each templet. This is made possible by making both the vertical and horizontal arms adjustable. Bulletin lists more than forty types of letters.—THE VARIGRAPH CO., INC., MADISON 1, WIS.

Bar-Bending Tools—Hand and hydraulically operated bending machines for pipes and tubes, reinforcement bars, and sections and structural shapes are described in 40-p. Catalog No. 49. This handy, pocket-size edition contains illustrations and sample bends and information on specially built bending machines for specific uses.—WALLACE SUPPLIES MFG. CO., INC., 1300 DIVERSEY PARKWAY, CHICAGO 14, ILL.

Load-Transfer Assemblies—Accessories for concrete pavement-joints listed in this catalog include stress-reducing supports, center support dowels, noncorroding dowels, self-adjusting assemblies, and self-anchoring assemblies. Bulletin describes action of load-transfer assemblies; describes the action of concrete pavements which make their use necessary; illustrates damaging concrete stresses; discusses long vs. short dowels; and contains other pertinent data.—RICHMOND SCREW ANCHOR CO., INC., 820 LIBERTY AVE., BROOKLYN 8, N. Y.

Dragline Buckets—Complete line of buckets and fittings are listed in this catalog. The Yaun buckets are available in seventeen sizes ranging from ½ to 4 yd. Each type and size of bulletin is illustrated, accompanied by a table listing component parts, price per fitting, and material from which each part is fabricated. Text describes principal features of each.—YAUN DRAGLINE BUCKETS & MFG. PLANT, BATON ROUGE, LA.

Ball Bearings for Conveyors—Five distinct types of self-sealed and lubricated-for-life ball bearings for belt and trolley conveyors are listed in a 16-p. catalog. This catalog is illustrated with line drawings and numerous photographs of installations. Accompanying these illustrations, are performance records of each installation. —NEW DEPARTURE, DIVISION OF GENERAL MOTORS CORP., BRISTOL, CONN.

Gas Pumps—Catalog 31-B-17 describes gas pumps in 18 standard sizes with capacities ranging from 5 to 620 cfm. at pressures up to 2 lb., from 5 to 320 cfm. up to 4 lb., and from 5 to 175 cfm. up to 6 lb. This booklet (8 pp.) discusses the advantages of the rotary positive principle, and shows sectional views along with a chart to graphically illustrate volume and power characteristics of constant pressure and variable-speed, multi-speed, or constant-speed drives. These pumps handle natural and manufactured gas, hydrogen, oxygen, carbon dioxide, and many other gases. — ROOTS-CONNERSVILLE BLOWER CORP., 900 W. MOUNT ST., CONNERSVILLE, IND.

Cold-Forged Casters—Catalog supplement describes low-cost Series 40 cold-forged casters. It lists specifications of the various diameters and types of wheels available. Wheels are available with load capacities ranging from 140 to 400 lb.—THE RAPIDS-STANDARD CO., INC., DEPT. CF-166, 342 RAPIDSTAN BLDG., GRAND RAPIDS 2, MICH.

Sling With Tapered-Sleeve Splice—Rolled loop and single tapered sleeve provide all-purpose sling with greater flexibility and compactness. Four-page folder describing this development contains a table listing breaking strength, loop dimensions, and sleeve dimensions for slings made from wire rope with diameters ranging from 2 to ¼ in. The bulletin also describes how the loop is formed, and the savings possible by eliminating splicing operations by users.—JOHN A. ROEBLING'S SONS CO., TRENTON 2, N. J.

Chemical Feeder—Feed-Rator self-contained chemical feeder is described in 4-page folder. This unit can be used to control, meter, and dispense relatively small amounts of special chemicals into larger streams. Built-in educator takes the place of a pump, permitting the feeding of highly corrosive chemicals directly from a container. Unit will treat up to 7,000 gal./day of water.—FISCHER & PORTER CO., HATBORO, PA.

GE Lists Five Catalogs—A series of five new publications on adjustable-speed units has been announced by the General Electric Co. They are: Bulletin GEA-5334 (24 pp.) on adjustable speed benefits; Bulletin GEA-4883A (8 pp.) on adjustable-speed ACA motors; Bulletin GEA-5335 (8 pp.) on speed variators; Bulletin GEA-5336 (8 pp.) on electronic speed variators; and Bulletin GEA-5337 (20 pp.) on Thy-Mo-Trol adjustable-speed drives. —GENERAL ELECTRIC CO., APPARATUS NEWS BUREAU, SCHENECTADY 5, N. Y.

Pipe Protection—Fifth edition of book on pipe protection (22 pp.) describes the latest advances in pipe-protection methods. Information is provided on coating and wrapping applications, on Roto-Grit-Blast cleaning, preheating, inspection methods, delivery scheduling, load unit shipping, and field handling. The 5th edition is designed as a buying aid for engineers and technicians interested in increasing efficiency of their pipe protection.—HILL, HUBBELL & CO., DIV. GENERAL PAINT CORP., 2627 ARMY ST., SAN FRANCISCO, CALIF.

Earthmovers in Action—Photographic review of International crawler and wheel tractors in a wide variety of earthmoving operations is presented in a new 12-p. catalog. Models ranging from the 140-hp. TD-24 to the 44-hp. ID-9 are shown on typical jobs with matched mounted or drawn equipment. Brief captions give work details and owner reports of tractor performance. — INTERNATIONAL HARVESTER CO., INDUSTRIAL POWER DIVISION, 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Aerial-Survey Service—Basic principles of modern techniques employed in producing aerial-topographic maps are explained in new brochure entitled "Wings for the Transit". This booklet illustrates various stages in the preparation of accurate maps from precision aerial photographs, shows samples of these photographs, and indicates the type of equipment used in producing photogrammetric maps.—LOCKWOOD, KESSLER & BARTLETT, INC., 32 COURT ST., BROOKLYN 2, N. Y.

Rock-Boring Machine—Horizontal and vertical-type rock-boring machines are described in this 8 pager. The McCarthy drill bores up to 12-in.-dia. holes to depths of 150 ft. Complete specifications and operating features are listed in the catalog. Pictures illustrate various applications. — THE SALEM TOOL CO., SALEM, OHIO.

Smooth-Ceiling Systems—Special system uses a steel grillage that eliminates flared column capitals, drop panels, and beams. Bulletin 49 (8 pp.) shows numerous buildings in which this type of construction has been used, as well as test slabs and the results achieved with various test loads. —SMOOTH CEILINGS SYSTEMS, 802 METROPOLITAN LIFE BLDG., MINNEAPOLIS 1, MINN.

Sound-Powered Telephone—Operates without batteries or any outside power for either talking or ringing. Features and fundamentals of operation are listed in this brochure. These telephones are recommended for tunnel work and similar operations. They are weather and dust proof. Range is 30 miles.—UNITED STATES INSTRUMENT CO., 409 BROAD ST., SUMMIT, N. J.

ADVERTISERS IN THIS ISSUE

Albert Pipe Supply Co., Inc. 91
American Pipe & Construction Co. 77
Armco Drainage & Metal Products, Inc. 2nd cover

Bailey Meter Co. 94
Baker Mfg. Co. 121
Bay City Shovels 101
Behlen Mfg. Co. 96
Belmont Iron Works 91
Berger & Sons, C. L. 2
Bethlehem Steel Co. 12
Blaw-Knox Div., Blaw-Knox Co. 66
Briggs & Stratton Corp. 10
Broderick & Bascom Rope Co. 70
Buchanan Lumber Co. 89
Butler Bin Co. 19
Byers Co., A. M. 119

Carew Steel Products Corp. 94
Cement Gun Co. 96
Cleaver Brooks Co. 72
Cleco Div. Reed Roller Bit Co. 73
Cummins Engine Co., Inc. 13

Douglas Fir Plywood Assn. 54

Eastman Kodak Co. 55
Economy Pumps, Inc. 90
Electric Tamper & Equip. Co. 54
Erie Pump & Engine Works 96

Flexible Steel Lacing Co. 89
Fruehauf Trailer Co. 53

Goodrich Co., The B. F. 1
Griffin Wellpoint Corp. 125
Gulf Oil Corp. 16
Gunite Concrete & Construction Co. 88
Gunite Construction Corp. 8
Gurley, W. & L. E. 100

Hayward Co., The 89
Hamilton-Thomas Corp. 90
Hayes Track Appliance Co. 95
Hyster Co. 59

Ingersoll-Rand 80
International Harvester Co. 14, 15

Jaeger Machine Co. 63
Jenkins Bros. 57
Johnson Mfg. Corp. 127
Joy Mfg. Co. 69

Kinnear Mfg. Co. 89

Lock Joint Pipe Co. 123
Lone Star Cement Co. 26

MacArthur Concrete Pipe Corp. 74
Mahon Co., The R. C. 61
McGraw-Hill Book Co. 58, 68
McKiernan-Terry Co. 95
Metallizing Engineering Co., Inc. 21
Michigan Power Shovel Co. ..... 3rd cover
Midwestern Engine & Equipment Co. 87
Moretrench Corp. 18
Mott Core Drilling Co. 8

Nelson Corp., The Herman 74
Northwest Engineering Co. 3

Ohio Locomotive Crane Co. 94
Oliver Corp. 4

Pennsylvania Drilling Co. 96
Pittsburgh-Equitable Meter Div. Rockwell Mfg. Co. 49
Portland Cement Assn. 51
Pressure Concrete Co. 95
Pusey & Jones Corp. 88

Quaker State Oil Refining Corp. 79

Railway Express Agency, Air Express Div. 60
Raymond Concrete Pile Co. 11
Rodgers Hydraulic, Inc. 20
Rogers Bros. Corp. 66
Ryerson & Son, Jos. T. 22

Sauerman Bros. 95
Servicised Products Corp. 124
Silent Hoist & Crane Co. 73
SKF Industries, Inc. 17
Smith Co., S. Morgan 75
Smooth Ceilings System 125
Spencer White & Prentis, Inc. 88
Sprague & Henwood, Inc. 127
Stang Corp., John W. 88
Stemco Corp. 52
Stone & Webster Engrg. Corp. 67

Texas Co., The 6, 7
Timken Roller Bearing Co. ..... 4th cover
Tinney Drilling Co. 125

Underpinning & Foundation Co., Inc. 91
Union Wire Rope Corp. 64, 65
Unit Crane & Shovel Corp. 8
U. S. Rubber Co. 5
U. S. Steel Subsidiaries 28
Universal Atlas Cement Co. 28

Vacuum Concrete, Inc. 90
Vickers, Inc. 9
Victaulic Co. of America 90
Vulcan Iron Works 99

Waukesha Motor Co. 71
Wallace & Tiernan Co., Inc. 24
Weinman Pump Mfg. Co., The 50
White Co., David 76
White & McColl, Inc. 91
White Mfg. Co. 124
Williams & Co., J. H. 125
Winslow Scale Co. 94

Professional Services 115, 116, 117

SEARCHLIGHT SECTION

(Classified Advertising

Employment
Positions Vacant 104, 105
Selling Opportunities Offered 105
Positions Wanted 115, 116
Employment Services 105
Labor Bureaus 106
Special Services 106

Educational
Schools 105
Tutoring 105

Notices
Proposal 103, 104

Property
Wanted 106

Equipment
(Used or Surplus New)
For Rent 106
For Sale 106-114
Piling 114
Pipe 114
Rail 114
Surveying Instruments 112

Wanted
Equipment 112
Miscellaneous 106

ADVERTISERS INDEX 117

ENGINEERING NEWS-RECORD

HOWARD OLSEN, Business Manager — G. R. RAMEL, Sales Manager

Sales Representatives—Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., *Chicago* 11; Ralph Dorland, 68 Post Street, *San Francisco* 4; D. S. Robertson and W. G. Payne, 330 W. 42nd St., *New York* 18; A. B. Cozens, 17th and Sansome Sts., *Philadelphia* 3; E. E. Duff, Jr., Hanna Bldg., *Cleveland* 15; B. F. Horn, Penobscot Bldg., *Detroit* 26; W. E. Donnell, Continental Bldg., *St. Louis* 8; C. F. McReynolds, 621 So. Hope St., *Los Angeles* 14; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta* 3; J. H. Allen, First National Bank Bldg., *Dallas* 1. Other sales offices—*Chicago* 11: 738-39 Oliver Bldg., *Pittsburgh*, 1427 Statler Bldg., *Boston* 16; Aldwych House, *London*, England.

SPEAKING OF CONCEALED SAWS

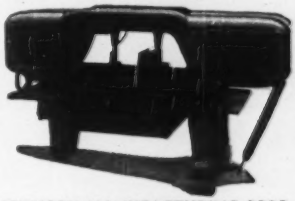
As an added safety feature, all Model "J"

JOHNSON METAL BAND SAWS

come equipped with a BLADE GUARD located between the Left Frame and Guides. It covers the exposed cutting portion of the blade as a means of protection. Readily removed to change blade. Cuts 10" rounds, 18" flats.

Also Model B, lighter, portable. Cuts 5" rounds, 10" flats.

Write for Catalog



JOHNSON MANUFACTURING CORP.
Albion, Michigan

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and all Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.

Scranton, Pa. Dept. E, U. S. A.

***Changed your* ADDRESS?**

Let us know so that we can keep copies of Engineering News-Record coming promptly.

TO: Circulation Dept.
Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

Name .....

Old Address .....

New Address .....

Company .....

PERSPECTIVE . . .

Potent power for pollution abatement

State regulatory agencies and sportsman groups haven't pulled together very well in the past on stream-pollution abatement, although both seek the same objective. A new development in Illinois shows the way for a happy and effective alliance. Here the State Federation of Sportsmen's Clubs has, in effect, donated the services of 65,000 men to the Illinois State Sanitary Water Board in promoting and aiding the enforcement of a new "clean streams" law.

Generally speaking, sportsmen have not been too patient or realistic regarding pollution-abatement measures. They have believed that legislation of the "Thou shalt not" variety was the answer to curing abuses, some of which have been a century in the making. Economic and practical considerations in putting across a program of abatement, which involves the expenditure of millions of dollars by public and private interests, have not been fully appreciated.

A banker's the boss

Not so with the Illinois sportmen. Following several conferences with Clarence Klassen, technical secretary, and other members of the Sanitary Water Board, the federation established a "Pollution Abatement Public Relations Committee". Under the leadership of Stuart Sundberg, a Rockford banker, a 167-man committee was activated. Members are spotted strategically throughout the state.

Maintaining close liaison with Sanitary Engineer Klassen, the committee keeps itself alerted on every action involving stream clean-up. For example, when it learns that a municipal sewage-treatment project is being held up because of lack of funds, the committee members in the local area go into action. They make representations to the mayor and council, sponsor meetings to discuss the situation, and otherwise beat the drum to arouse favorable public sentiment.

Support public officials

"We're out to support the regulatory authorities in getting action", says Mr. Sundberg. "To this end our committee operates a three-point program: (1) it promotes state and local legislation; (2) it endeavors to mold public opinion; and (3) it reports on conditions that claim attention for correction."

In the few months that the committee has been working, it has chalked up substantial accomplishments. First, its members played an important part in helping the Sanitary Water Board obtain enactment of a strengthened statewide pollution-control law.

Armed with copies of the law and a firm conviction that the law means exactly what it says, members of the committee are calling upon industries and municipalities in their districts for friendly, educational chats with the proper officials. The results of these visits are tabulated on a form, two copies of which are filed with Chairman Sundberg. One copy is forwarded to the Sanitary Water Board for its information.

Meantime, the board keeps the committee posted on its actions. When an official order is issued for correction of a local pollution condition the committee knows about it. From then on, the committee begins an organized campaign of local pressure until the order is complied with.

Enthusiasm of the sportsmen for their task is exceeded only by the enthusiasm of the Illinois Sanitary Water Board for the cooperation it is getting. As Klassen puts it:

"We've had our staff augmented with 167 voluntary workers who are indefatigable in their efforts. And they furnish the kind of help that a regulatory agency needs in order to crystalize favorable local support".

The idea's spreading

What the sportsmen are doing in Illinois is unique from the standpoint of organization and results. But elsewhere, other conservation groups are throwing their weight squarely behind pollution-abatement authorities. A recent example was furnished by the Izaak Walton League in Ohio. In a resolution acknowledging their belief that the "Ohio River Valley Water Sanitation Commission" is "earnestly and sincerely seeking to rid the waters of the basin of pollution . . ." these Waltonians pledged their support with the recognition that "the cleansing cannot be done overnight".

ALSO RECORDED

Quiet!—Court proceedings in Brownsville, Texas, are going to be quiet—or else. Federal Judge Allen B. Hannay, highly annoyed by construction noises across the streets from his courtroom, slapped $100 fines on a superintendent and a carpenter (who was running an electric saw) and effectively halted a $300,000 theater-and-office-building job. Quiet restored, the judge rescinded the fines and sentence, but the contractor will have to use handsaws hereafter.

Nosey—Virginia's Highway Department was mobilized for a silent—but not odorless—warfare. It concerned the problem of removing skunks, most of which were dead and unbearably ripe, from state highways. Motorists were complaining bitterly. Main obstacle is the skunks themselves. Engineers said worriedly that the skunks—supremely confident of their own powers—have no fear of vehicles, and make no attempt to dodge on highways.

Missile—Acting exactly like a toy balloon when air pressure is released, a 250-pound oxygen bottle went swooshing about construction works near Coulee Dam, Wash. The bottle-cap was knocked off by a falling beam and the bottle zoomed upward about 100 ft. and rushed erratically through the workmen and machinery. Four men were injured.

Animal Corner—It was beavers—doing consistently better construction work than humans—that caused most of the trouble. At Mill City, Ore., beavers built a diversion dam that effectively flooded an aggregate plant of the Colgan Construction Co.; at Tipton, Wyo., the county engineer threatened to file suit to compel the State Conservation Department to remove beavers that have flooded out farmlands and clogged drainage systems; and at Kemmerer, Wyo., engineer Paul Taylor went to work on a project, came back to see his car buried under a beavercut tree.

Noisy—Painting of the dome of Nevada's State Building auditorium at Carson City was pleasing to the eye—but had unexpected aural results. Painters carefully filled in a honeycomb of small holes in the ceiling (240,000 holes, to be exact) to get a nice smooth finish. The holes were part of an acoustical system—and sound now bounces unrestrained about the arena. The holes are being unplugged.

"Speaking of truck shovels.....
Why did you buy a MICHIGAN?"

"Because it's EASY to HANDLE!"

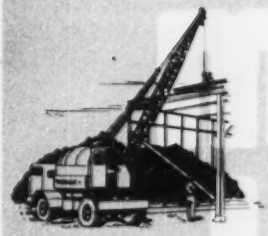
On the road, for example, it's as easy to drive as any ordinary truck. On the job, its control makes a hit with operators. MICHIGAN'S air ram clutches are fast and smooth . . . they take the work out of operating. My operators *like* those finger-tip air controls—and *I* know that they've paid off in faster, more efficient operation . . .

And then there's MICHIGAN'S *remote control.* When you pull onto the job, you're ready to go! There are no draglinks to disconnect, no adjustments to make. You can drive and steer from the turntable cab with the cab in any position. The turntable engine supplies the power.

Take all these easy-handling advantages together and you can see why I advise you to get a MICHIGAN!"

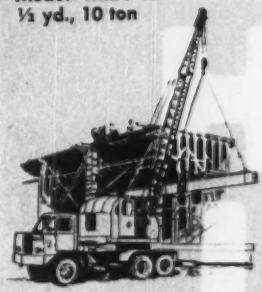
Write for Bulletin 100—
"On the Job with MICHIGAN"

DID YOU KNOW
you can buy
a brand new
MICHIGAN
TRUCK CRANE
complete with chassis
for as little as $10,250
F.O.B. factory*

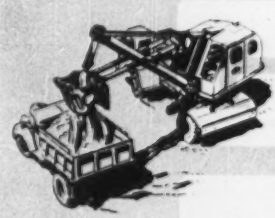


Model T6K
⅜ yd., 6 ton

Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton



Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
500 Second Street, Benton Harbor, Michigan, U.S.A.

Here's the 64-wheel answer . . . to a 300-ton question!

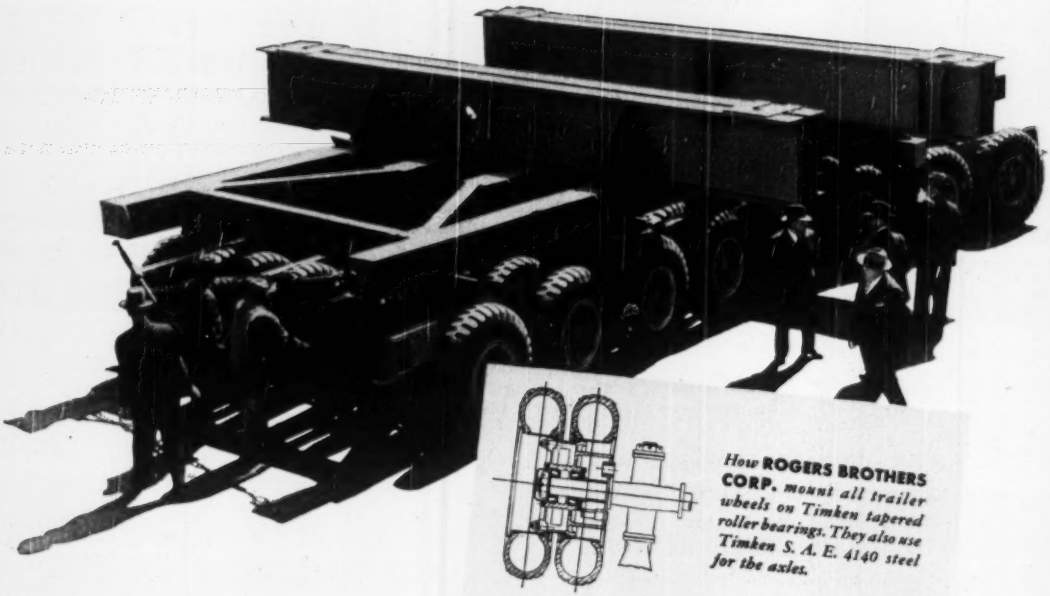
BEFORE this picture was taken, nobody had ever moved a 300-ton payload on a rubber-tired vehicle. This mammoth trailer—designed and built by Rogers Brothers Corporation for a special military project—had to be created to make it possible.

To help carry the 600,000 pound load, designers called for Timken tapered roller bearings in each of the 64 wheels.

Timken® bearings in the wheels assure minimum maintenance—give smooth, trouble-free operation and long service. They take radial, thrust, and combination loads—thanks to their tapered design. Line contact between rolls and races gives them extra load capacity. And they're made of Timken fine alloy steel for greater strength and wear resistance.

Due to true rolling motion and incredibly smooth surface finish of rolls and races, Timken bearings minimize friction. They hold wheels in proper alignment. Normally they last the life of the machine in which they are used. Backed by 50 years of bearing research and development, Timken bearings are first choice throughout industry. Make sure the machines you build or buy are equipped with Timken tapered roller bearings. Always look for the trade-mark "Timken" on the bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best



How **ROGERS BROTHERS CORP.** *mount all trailer wheels on Timken tapered roller bearings. They also use Timken S. A. E. 4140 steel for the axles.*

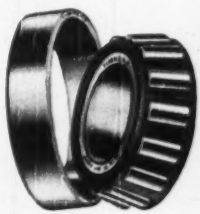
WE MAKE OUR OWN STEEL

The special grade alloy steel which gives Timken bearings their strength and resistance to wear, is made in our own steel mills.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ * BEARING TAKES RADIAL ▭ AND THRUST ◇ LOADS OR ANY COMBINATION